GHD Advisory

Western Bay of Plenty

Public Transport Mode Shift Scenarios

13 March 2020

Scope of Work

Overview

The Urban Form Transport Initiative (UFTI) commissioned a multi-modal technical report to aid the development of the UFTI programmes. GHD was contracted to complete the work on behalf of UFTI. The initial project scope for this work was broader and included considering other modes such as walking, cycling and micro mobility. Upon direction from the UFTI project team, the scope for the work was revised to focus and provide detail on increasing public transport use within the Western Bay of Plenty (WBOP) sub-region.

Reason for Scope Change

The scope revision was made by UFTI on the basis of:

- Needing to move the maximum number of people to work, schools and other locations particularly during peak times, and significantly increasing public transport mode share from the current 1-2%.
- The analysis from the draft Tauranga Transport Programme indicated that public transport levels of service in the WBOP sub-region relative to comparators are lower (local circumstances aside). This indicates that there are opportunities for public transport improvements relative to the level of service gaps of other modes such as walking and cycling, or micro-mobility.
- The pathway to improve public transport is often more complex than other modes because of the numerous factors involved and need co-ordinating. Additionally, supportive land use/urban form are critical components to support the uptake of public transport services.
- Tauranga City Council and Western Bay of Plenty District Council are completing or undertaking significant pieces of work to develop a strategic cycling network that will support cycle/walking and other personal mobility trips throughout the sub-region.

The revised scope meant that additional effort and resource could be used to focus more on increasing public transport mode share. Based on the direction received from the UFTI project team to revise the original scope, GHD prepared the WBOP Public Transport Mode Shift Scenarios report.

Contents

Executive Summary

Introduction

GHD has been commissioned to assist Tauranga's Urban Form and Transport Initiative (UFTI) to achieve substantial improvements in the transport system and the urban form for the Western Bay of Plenty (WBoP) sub-region.

The aim of this project is to outline a suite of potential interventions and triggers that are likely to be required to achieve a range of future public transport mode share scenarios over the short (10 years), medium (11-20 years) and longer term (21-30 years).

Review

An interactive workshop was undertaken with targeted stakeholders in Tauranga in October 2019 to help inform the development of this Public Transport Mode Shift Plan. Common themes that emerged from the customer insight exercises centred on the importance of **travel time, reliability**, and **cost** (relative to that by other modes) and **frequency** of services.

Explore

This project focusses on the public transport system in the WBoP sub-region as this provides the greatest opportunity to move the highest number of people by modes other than car, but this work also recognises the role that other modes will need to play to achieve emissions targets over the next 30 years.

A review of current and future challenges and constraints helped stakeholders to understand the scale and significance of the problems. The next step was to develop potential interventions to respond to these challenges and opportunities.

The immediate focus was generally on improving the customer experience and beginning the transition to alternative modes, by improving the attractiveness of existing public transport services. Common themes in the short term relate to travel demand management, walking and cycling and public transport improvements.

In the longer term, the actions identified are more focused on transformational changes to move more people through mass transit and supporting land use patterns such as Transit Oriented Developments to enable the critical mass of people and density required to support higher capacity modes of transport.

Develop

Analysis has been undertaken to determine potential future AM peak hour mode share scenarios.

This work shows the significant level of uptake in public transport use that would be required to achieve higher mode share scenarios by 2063. As an example to achieve 20% public transport mode share by 2063, patronage would need to increase from a forecast base of around 2,500 public transport trips per day in 2063 up to 11,500 trips. If 20% mode share is achieved then the analysis suggests that a form of high capacity transit is likely to be required to meet the anticipated level of demand.

The analysis suggests that the greatest level of demand for public transport is anticipated for people travelling within the eastern sector of the WBoP sub-region. This is followed by people travelling both within the southern sector and from the southern sector to the central sector. The other high demand area is from the western sector to the central sector.

Mass rapid transit is also a way to stimulate land use around public transport hubs. Increased frequencies and/or larger buses could be an alternative response to meet future increases in public transport demand over time. This data provides a useful indication of where future demand is likely to warrant the investigation of higher capacity modes.

Summary and Recommendations

This report has built on the extensive work undertaken to date. It has developed an understanding of key customer insights and outlines the opportunities to make a significant shift in mode share over the next 10, 20 and 30 years.

The analysis suggests that the greatest level of demand for public transport is anticipated for people travelling within the eastern sector. This is followed by people travelling from the southern sector to the central sector.

This work suggests that a phased approach is required to progress towards the desired future state, starting with bus priority and working towards higher capacity modes and supporting measures that include land use intensification, Park and Ride and parking management in the central City and other high trip generating areas.

Introduction

Shaping highly liveable places in thriving cities and fast growing regions

When we think about how and why we live where we do, we are drawn to the WBoP's enviable lifestyle, local cafes, beaches and an outstanding natural environment. People are attracted to living here because of the opportunities.

Imagine a modern, integrated public transport system that provides convenient and reliable transport in WBoP sub-region. A system where public transport is the mode of choice for dropping the kids off at school, travelling to the beach for a family picnic, getting to the airport for that early Monday morning flight to Wellington or heading into town for dinner with friends at the end of a busy week.

The aim of this project is to help shape the future vision for public transport in the WBoP sub-region and detail potential future public transport mode share scenarios to inform a suite of potential interventions and triggers that may be required to support these future mode share scenarios over the short (10 years), medium (11-20 years) and longer term (21-30 years).

This project focusses on the public transport system in the WBoP sub-region as this provides the greatest opportunity to move the highest number of people to work and school by modes other than car, but this work also recognises the role that other modes will need to play to achieve emissions targets over the next 30 years.

This piece of work is intended to start a conversation about potential future mode shift scenarios and the types of interventions and triggers. It is anticipated that this work will be further developed and evaluated as part of the options assessment phases of a future Programme Business Case.

The remainder of this report is structured as follows:

Review: A literature review of background documents and reports. A summary of key customer insight research and outputs from a stakeholder workshop that was held with targeted stakeholders.

Explore: An overview of the key current and future opportunities/challenges for public transport in Tauranga and the development of potential mode shift interventions over the short, medium and longer term.

Develop: The findings from initial technical analysis on potential mode shift scenarios and the likely interventions required to achieve mode shift.

Project Objectives

Purpose

To identify what factors across the land use, urban form, people and transport system are necessary to achieve a significant increase in public transport use.

Target Outcomes

- Gather ideas about public transport problems, including identifying key conflict points now and over the next 50 years (a focus on core routes); and,
- Establish and assess a range of alternatives and options that are required to accommodate different public transport mode share scenarios.

Parallel Workstreams

The purpose of this project is to identify a series of high level future public transport mode shift scenarios and to investigate the likely interventions that could be required if public transport mode share was to significantly increase. An increase to 20% mode share over the next 50 years is considered very achievable based on continuous year on year growth. The aim is to focus on public transport trips to the central city as this provides the greatest opportunity to move the most number of people to work and school, and aligns with the UFTI investment objectives.

This work acknowledges that there are broader considerations that need to be taken into account when investigating mode shift scenarios, including wider modes such as walking and cycling, land use planning, urban form and, costs/benefits and emerging technology. UFTI is in the process of commissioning separate work packages which will explore these broader considerations.

This initial high level project is intended to inform subsequent phases of work and start a conversation amongst UFTI partners about ambitious future public scenarios. It will be used to inform decisions on where further analysis and detail should be undertaken to achieve the UFTI investment objectives and realise modal shift in the sub-region.

Review

The following section contains a summary of opinions expressed by a targeted reference group, a more comprehensive summary is provided at Appendix A.

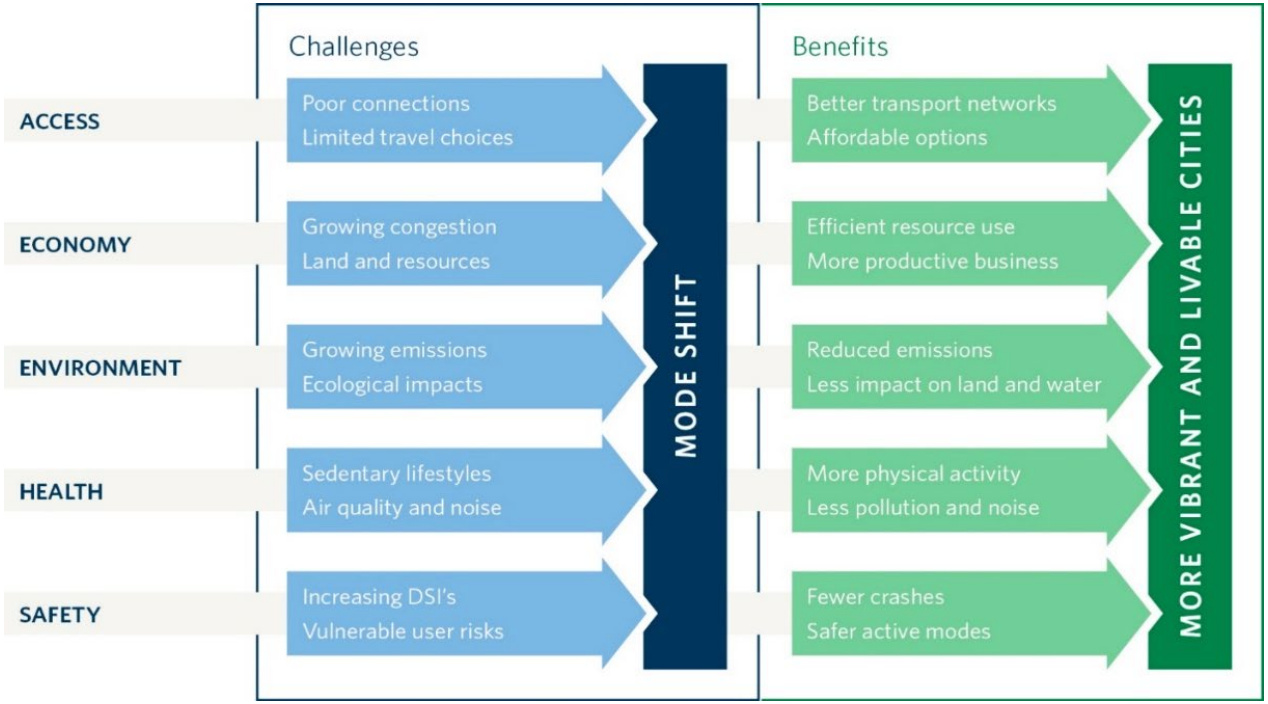
These insights have been considered by the consultant team and are used to inform the material presented in the subsequent sections.

Why is Mode Shift Important (Source: NZTA Keeping Cities Moving, September 2019)

- Mode shift is not an outcome itself – it is a measure of progress
- Mode shift can help address several key challenges and support many important outcomes
- In particular, mode shift is key to improving urban mobility by moving more people in fewer vehicles and less space
- This 'space efficiency' enables access to opportunities in a way that supports quality and liveable urban areas
- Mode shift is a key national priority and activities could be prioritised for funding through the next National Land Transport Fund

Key principles:

1. Target the causes of car dependency
2. Concentrate on high growth urban areas
3. Understand the journeys people make
4. Focus on the most effective modes
5. Ensure a consistent pace of change



The Case for Multi-Modal Mode Shift (Source: NZTA Keeping Cities Moving, September 2019)

All transport modes have their strengths and weaknesses, and a role to play in an integrated multi-modal system:

- Public transport can be an efficient way of moving large numbers of people but providing a high-quality service can be expensive. This means it can be difficult to provide an attractive service in lower-density areas or for journeys that are less common.
- Cycling is a healthy way to travel medium-length distances. However, bikes mix poorly with pedestrians and vehicles, which means that specific infrastructure is needed to make cycling a high-quality option. Slower average speeds than motorised modes, exposure to the weather and required fitness levels limit cycling's attractiveness for longer journeys, although e-bikes help overcome some of these challenges.
- Walking is also a healthy and congestion-free way of travelling shorter distances. It is free and does not require any specialist equipment or services. However, walking is much slower than other transport modes, making it less attractive for longer journeys. Poorly designed streets and urban areas can also make walking unattractive and unsafe.
- 'New' technologies such as on-demand services, e-scooters and car sharing are redefining interaction between traditional transport modes and operating models and have great potential to play a role in reducing car dependency.

Overall, an integrated approach is required that focuses each mode on playing a greater role in serving the types of trips they are well suited to. Each of these can also support the other, for example through making it easier and safer to walk or cycle to public transport. Because of their significant wider benefits, active modes should be the focus for achieving mode shift for shorter journeys.

This project specifically focuses on future public transport mode share scenarios, however recognises that this will need to be considered alongside existing work has already been completed or that is underway for other modes (walking, cycling, carpooling, scooters etc.) and broader mode shift enablers (land use/urban form). This includes work that has been progressed to improve walking/cycling mode share (particularly for short-medium trips) and parallel work that UFTI is progressing to understand land use interventions.

The Case for Multi-Modal Mode Shift in Western Bay of Plenty

The UFTI partners recognise the need to proactively plan and invest in the transport system to give effect to national and local strategic priorities and achieve mode shift.

Mode shift is important for the sub-region because:

- The State Highway network is largely complete and further major initiatives to add road capacity for private vehicles are likely to be cost-prohibitive. Furthermore, additional road capacity can result in negative effects on neighbouring communities and exacerbate a reliance on single occupant private vehicles through induced demand.
- With few future opportunities to add road capacity, travel demand is expected to increase substantially in the future due to population and employment growth. It is important to consider mode shift now to avoid future issues such as poor travel time reliability and increasing congestion.
- It is difficult and costly to retrofit public transport and active mode infrastructure into new developments. It is better to plan for higher capacity modes now in the sub-region and implement as required.
- Intensification in the Western Bay of Plenty around activity centres is also critical to encourage and enable short trips to be taken by foot and by bike. Intensification around public transport routes will help increase demand for services which can then result in improved service provision such as higher route frequencies.

Technological Advances (Source: MoT Transport Outlook: Future State, November 2017)

Many new technologies under development are likely to change local transport over the next 25 years. They include self-driving vehicles along with apps to match travellers with transport services in real time. The result may be a shift to 'mobility as a service', offering the convenience of private vehicle travel without the need to own a private vehicle or to be able to drive it.

The distinction between 'private', 'shared' and 'public' transport may be blurred. The future shape of 'public transport' could expand to cover any mode that a user can hire, purchase, or share, and not necessarily only from a public sector provider. Vehicle-sharing and ride-sharing fit this definition. In the future, high frequency services may operate on fixed schedules, as they do today, while other services could be offered on demand using technologies such as a smartphone app.

Some public transport vehicles could become self-driving, making it more economical to operate smaller buses and shorter trains. Smaller buses could be used to serve markets where traditional public transport services may not be viable. These include not only smaller cities and less dense suburbs, but also new point-to-point express services, collector services serving major destinations such as large employers, hospitals and shopping malls, or services that feed into more traditional public transport services.

Emerging technologies provide an opportunity to increase mode share of transport modes other than the private vehicle. They can help with first and last mile connections to public transport services, for example wheeled modes such as e-scooters. There is an opportunity for the Western Bay of Plenty and Tauranga to be an early adopter of new mobility technologies, to improve access to public transport and reduce dependency on private vehicles, particularly for short-medium length trips.

Emerging technologies in household transport

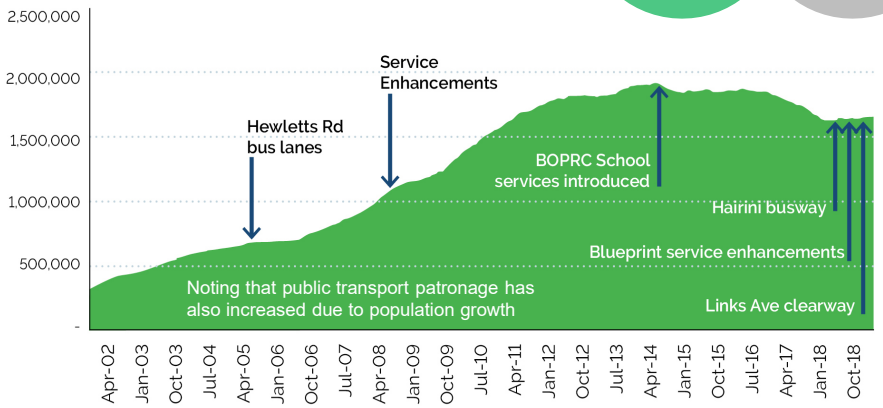
Current Situation

A significant amount of existing work has already been undertaken to understand the key transport problems and outcomes sought for the WBoP sub-region.

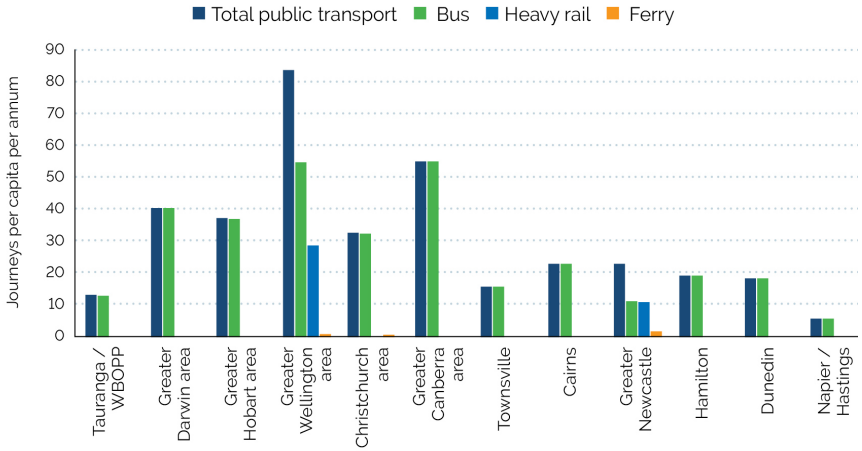
A technical review of relevant strategic documents and previous investigations has been undertaken. Key findings include:

- Tauranga is one of the most car dependant cities in New Zealand, with 84.7 percent car mode share for journeys to work.[1]
- Similarly, a report by the Bay of Plenty Regional Council states that 97 percent of all work and recreational trips are taken by private vehicle. [2]
- The current public transport mode share in the Bay of Plenty is around 1-2 percent compared to a national average of 5 percent.[3]
- In Tauranga bus patronage declined by 4.5 percent in 2017/18, with tertiary patronage decreasing by 18 percent.[3] However, since the start of 2019/20, bus patronage in TCC has been tracking ahead of 2018/19 as a result of network improvements.
- Rapid population growth is leading to increased demand for travel which is resulting in a reduced level of service on the road network.[4]
- Travel time reliability is decreasing as vehicle traffic increases, particularly during peak hours.[4]
- A recent customer insight survey conducted on behalf of the NZ Transport Agency has found that three out of four drivers cite congestion as an issue in Tauranga, and the bus is seen as the most likely alternative to the car.[5]
- Tauranga bus journey times are considerably slower than a journey by car and journey times are no more reliable than a car.[6]
- Customer research suggests that addressing long travel times and unreliability through measures such as increased frequency, bus lanes, express services and Park and Ride facilities are key to achieving mode shift.[7]
- Measures to make car driving less attractive such as parking prices, reducing minimum parking requirements for new residential and commercial developments, shared streets, slower speeds, road narrowing etc.

Bay of Plenty public transport trips 2002-2018



Public transport journeys per capita per annum - a comparison[33]



Current Situation

Tauranga has a similar level of private vehicle use as Hamilton, Christchurch and Queenstown as shown opposite.

Public transport use is the lowest of the six main urban centres and walking and cycling is lower than both Wellington and Christchurch.

It is recognised that Auckland and Wellington are more densely populated. However, this demonstrates the significant opportunity to increase public transport use in Tauranga and the wider Western Bay of Plenty to match the other main urban centres.

MODE OF TRANSPORT	AUCKLAND	HAMILTON	TAURANGA	WELLINGTON	CHRISTCHURCH	QUEENSTOWN
Car	68%	81%	80%	49%	73%	78%
Company car	7%	7%	10%	5%	7%	10%
Motor cycle	1%	2%	2%	3%	2%	4%
Bus	11%	4%	2%	15%	5%	4%
Train	6%			15%		
Ferry	1%			0%	0%	0%
Taxi or ride share	1%	0%	0%	1%	1%	0%
Bike/scooter share	0%	2%	3%	2%	4%	1%
Own bike/scooter	2%	2%	2%	3%	4%	2%
Walk/run	2%	3%	1%	8%	3%	1%

Insights

A Day in the Life

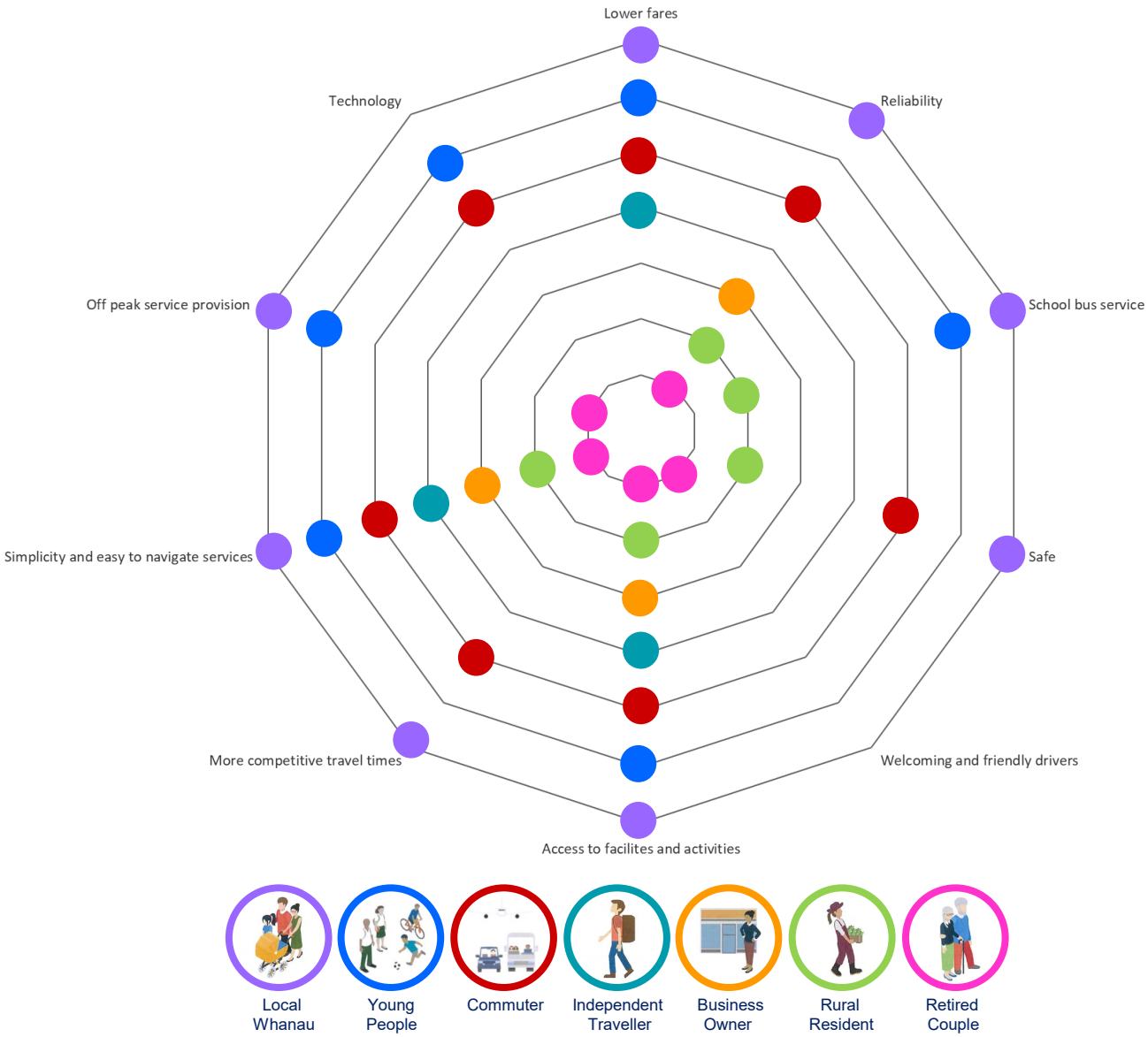
An interactive session was undertaken with staff from UFTI partners in Tauranga in October 2019. A set of fast paced and focused exercises moved from insights to ideas on specific actions and priorities to help achieve the desired mode shift outcomes.

A range of characters, representing user groups, were identified and participants were asked to describe the characters daily lives, connections with other characters and summarise their priorities.

There was a strong relationship between each user group, with some characters playing multiple roles and having similar needs, being dependant or affected by one another.

Common themes that emerged from the exercise emphasised the importance of:

- Public transport travel time (compared to other modes)
- Frequency of public transport services
- Ease of services (for example, minimising transfers)
- Reliability of public transport
- Cost (comparative to other modes)
- Access to a range of facilities and services



Explore

The following section contains a summary of opinions expressed by a targeted reference group, a more comprehensive summary is provided at Appendix B.

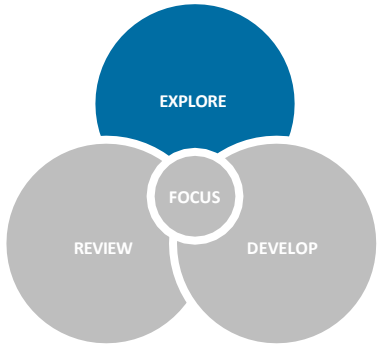
These insights have been considered by the consultant team and are used to inform the material presented in the subsequent sections.

Problem / Opportunity Identification

In groups, the workshop participants were asked to select a key corridor and identify the current and future opportunities, challenges and constraints. The following table summarises the key themes expressed by the participants for each corridor. A full summary is provided at Appendix B.

	Papamoa – Mount Maunganui - City	Omokoroa – Te Puna – Bethlehem - City	Tauriko – Pyes Pa - City
LAND USE / BUILT & URBAN FORM	▪ Impact of growth in Papamoa, Te Puke and Rangiuru provides an opportunity to increase PT use	▪ Growth planned mainly in Omokoroa ▪ Opportunity for TOD's, Park & Rides ▪ Intensification opportunity with TNL	▪ Schools in the area are key trip generators – mostly south of SH29 ▪ Welcome Bay could benefit from more amenities such as shops
TRAVEL CHOICE	▪ Bus transfers add to travel times making PT less competitive with cars ▪ Limited off peak bus services ▪ Buses get delayed in traffic on Golf Road, Maunganui Roundabout and approaching the bus lanes on Hewlett's Road	▪ Opportunity to consider ferry services from Omokoroa to City ▪ Low catchment/densities for passenger rail (currently)	▪ Lack of alternative modes along western corridors and low density makes PT provision challenging
SAFETY / WELLBEING	▪ Parking management leads to vehicles circling looking for a park	▪ SH network may cause severance ▪ A number of high risk intersections along SH2 corridor	

Programme Development Insights



The groups were next asked to create a programme of approximately 15-20 interventions that would deliver substantial mode shift and meet the needs of their particular characters over the short, medium and longer term. The groups were provided with a provisional set of actions, and were encouraged to amend or include any of their own actions. The group then prioritised the most urgent interventions.

Papamoa – Mount Maunganui – Te Puke - City (Te Papa)

Short term 0-10 years

- Traffic light signal pre-emption, intersection priority for PT along all major PT routes
- Public transport use is incentivised and heavily advertised by Council
- More road space allocated to buses at peak times, clearways
- Intersection upgrades to improve safety on key corridors and optimise public transport services
- A 30 year Mass Transit Strategy is developed
- Developers required to contribute to PT infrastructure
- Urban cycle network is completed
- New areas of intensification are provided with improved services
- Park and Ride at Stadium
- Undertake a significant review of the PT services including frequency, coverage, routes and price with a view to updating the services provided
- Parking price increase then reduce PT fares
- Match PT services with events, schools and employment hubs
- Intensify uses alongside existing centres and around transit hubs to create a critical mass for transit and encourage linked trips
- The cycling and walking corridor is separated from high traffic corridors along key routes

Medium term 11-20 years

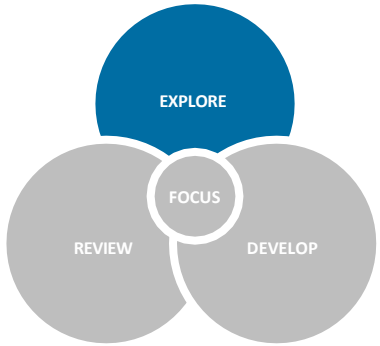
- Bus Rapid Transit is build along key arterial routes
- Incorporate a range of living options and mixed use development around transit hubs
- Intensify residential proximate to transport and activity hubs (TOD's)
- Mass transit Te Tumu and beyond
- PT corridor via Matapihi (part of Eastern Corridor TOD)
- Increase capacity of key arterials (new lanes to support multi-modal)
- Additional crossing points along areas with strong pedestrian presence or near major PT infrastructure
- More bus interchanges and PT transport facilities in both urban and residential areas
- Park and Ride at Papamoa Eastern Interchange
- Upgrade streets and provision of facilities to encourage active modes and improve comfort (e.g. seating, covered bus stops, drinking fountains, trees for shading, bike racks etc.)

Long term 21-30 years

- Introduce a high frequency localised transport loop e.g. Paengaroa, Te Puke, Rangiuru
- Extend Papamoa inland and grow Mangatawa to support SH2 PT corridor
- Mass transit Paengaroa, Te Puke, Papamoa, Mount Maunganui to Te Papa (City)

- Biggest long term impact
- Requires immediate attention
- Second highest priority
- Third highest priority

Programme Development Insights



Omokoroa – Te Puna – Bethlehem - City (Te Papa)

Short term 0-10 years

- A 30 year Mass Transit Strategy is developed
- Reduce price of PT travel relative to car travel , increase City parking charges
- *Prioritise active travel between local activity areas*
- Match PT services with events, schools and employment hubs
- Land bank Park and Ride sites and future TOD sites
- Development of Park and Ride at Te Puna, Omokoroa 2022 and Apata 2020
- Public transport services extended further to major growth areas
- Priority PT lanes along major arterial roads e.g. existing SH2, Bethlehem, 15th Avenue, Cameron Road, Te Puna

Medium term 11-20 years

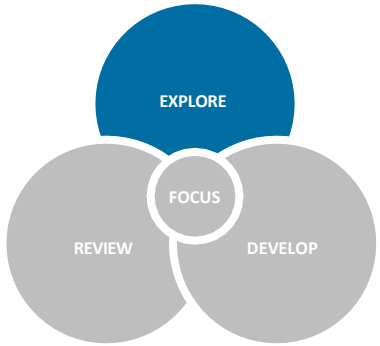
- PT bus-trains that can use both the rail corridor and road network
- The cycling and walking network is separated from high traffic corridors along key routes e.g. Otumoetai 2025, Bethlehem 2030
- Ferry service between Omokoroa, City and Mount Maunganui
- More local PT services for growth areas and existing areas, particularly around schools

Long term 21-30 years

- Bus Rapid Transport is built along key arterial routes e.g. Omokoroa to City and Katikati to City
- Intensification and TOD's around Cherrywood, Matua
- Incorporate a range of living options and mixed use development around transit hubs
- Intensify uses alongside existing centres and around transit hubs to create a critical mass for transit and encourage linked trips

- Biggest long term impact
- Requires immediate attention
- Second highest priority
- Third highest priority

Programme Development Insights



Tauriko, Pyes Pa, Welcome Bay - City (Te Papa)

Short term 0-10 years

- The cycling and walking network is separated from high traffic corridors along key routes
- Enforce school zones
- Easy payment/timetable – one stop shop on a mobile phone
- Road network optimisation for PT and smart transport corridors by time of day
- Reduce price of PT travel e.g. day savers, monthly options incentivise regular PT use
- More bus interchanges (City interchange) and PT transport facilities in both urban and residential areas including Park and Ride at Tauriko and Welcome Bay
- Undertake a significant review of the PT services and active modes including frequency, coverage, routes and price with a view to updating the services provided
- Parking price increase to make PT more attractive
- Match PT services with events, schools and employment hubs (total mobility/on demand services)
- Bus Rapid Transit is built along key arterial routes (Tauriko to City)
- Additional crossing points along areas with strong pedestrian presence or near major PT infrastructure
- Introduce high frequency localised PT loop

Medium term 11-20 years

- Intensify uses alongside new and existing centres and around transit hubs to create a critical mass for transit and encourage linked trips (policy to enable in short term)

Long term 21-30 years

- Passenger rail hubs
- Ferry hubs
- Welcome Bay to City rapid transit
- Welcome Bay to City to Mount Maunganui ferry services

Biggest long term impact
Requires immediate attention
Second highest priority
Third highest priority

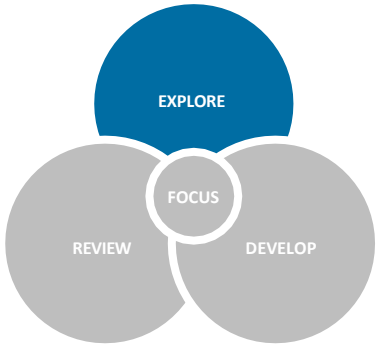
Summary of Insights

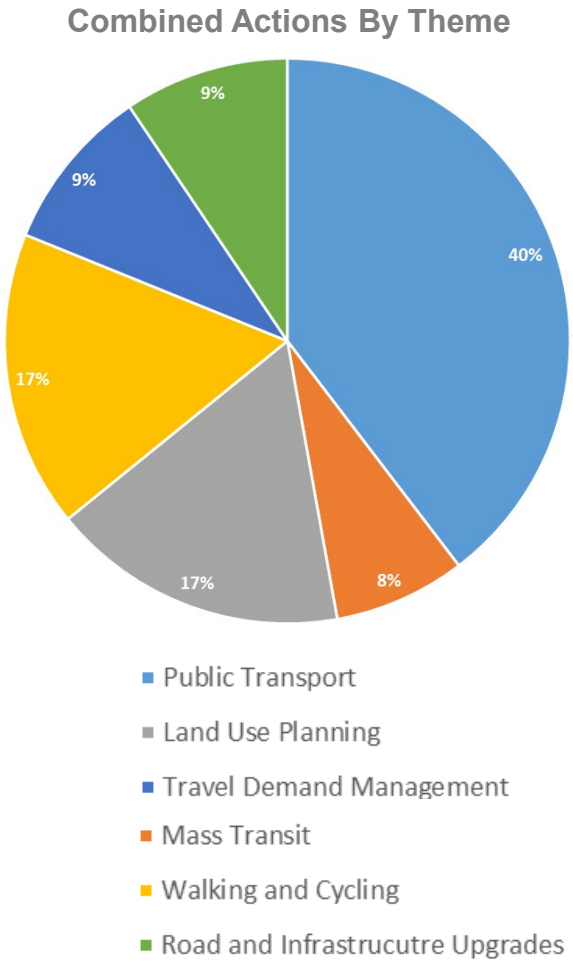
Overview

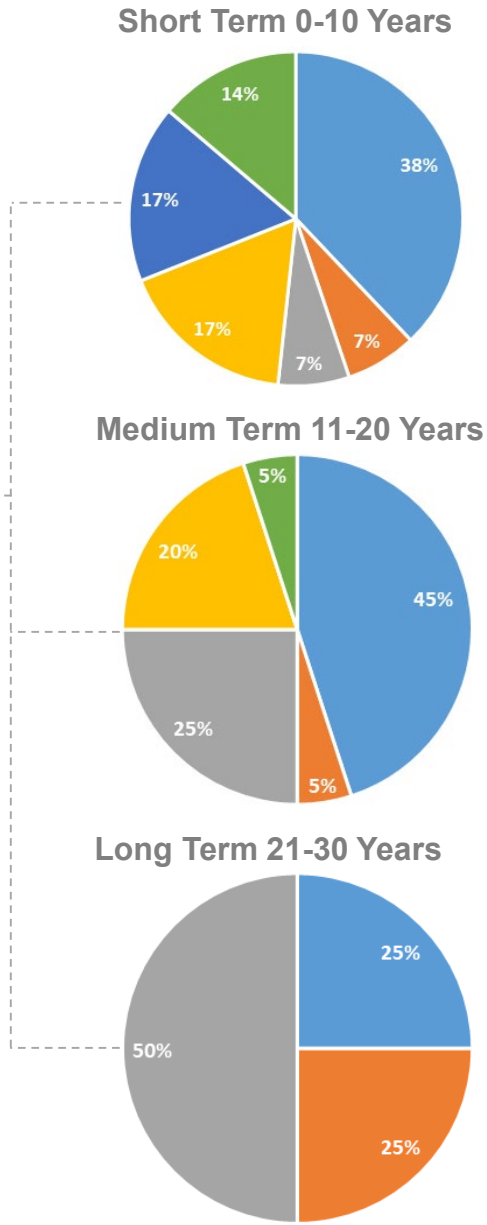
Analysis of the interventions and phasing overall shows a significant emphasis on public transport improvements, land use planning and walking and cycling interventions across all of the key corridors.

The shorter terms focus was generally on improving the customer experience and beginning the transition to alternative modes, by improving the attractiveness of existing services. Common themes in the short term relate to travel demand management, walking and cycling and public transport improvements.

In the longer term, the actions identified are more focused on transformational changes to move more people through mass transit and supporting land use patterns such as TOD's to enable the critical mass of people and density required to support higher capacity modes of transport.







Develop

The following section builds on the UFTI partner insights presented above and details the consultant teams view on the interventions required and triggers to achieve a range of future public transport mode shift scenarios.

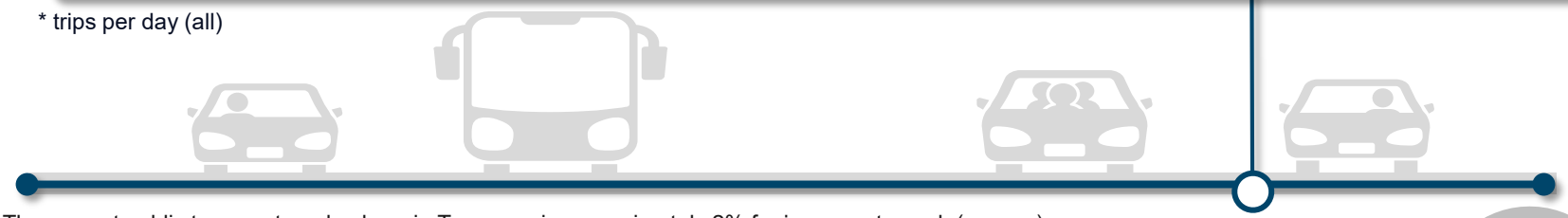
Mode Share Scenarios

Data for the WBoP area for the Base+ or Base++ scenarios was not readily available

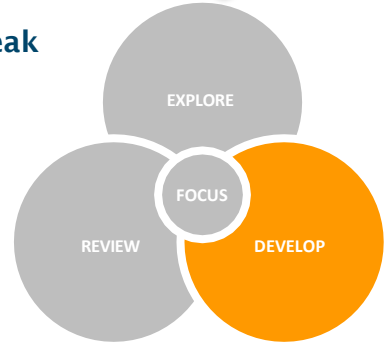
This section outlines the technical analysis that has been undertaken to determine potential future mode share scenarios for the year 2063. This section also identifies the likely public transport frequency and service requirements for a range of mode shift scenarios.

	PT	Base	Base +	Base ++	10%	20%	30%	50%
TCC		2,500 trips	* 2,900 trips	4,100 trips	5,750 trips	11,450 trips	17,200 trips	28,650 trips
WBoP		2,850 trips	* n/a	n/a	8,800 trips	17,600 trips	26,450 trips	44,050 trips

* trips per day (all)



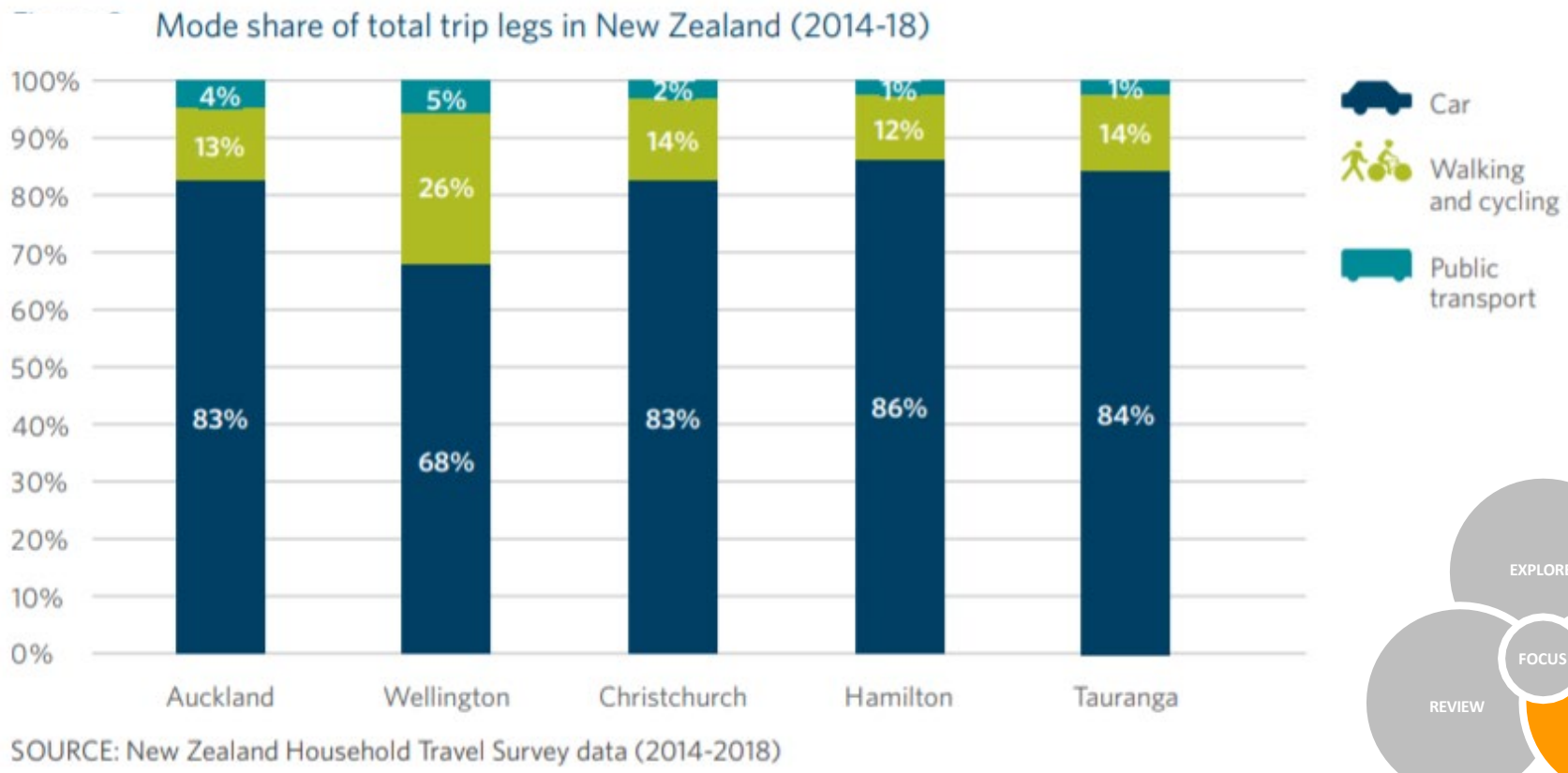
- The current public transport mode share in Tauranga is approximately 2% for journeys to work (census)
- The base (2018) transport model gives a figure of 1.4% for public transport in the morning peak hour for all trips
- The future base case for 2063 gives the AM peak figure for the Tauranga City Council area as 4.4% of all trips. The corresponding figure for the WBoP area is 3.2% of all trips.
- Tests on a Base + (expanded bus services) scenario in 2063 gives the AM peak figure for the TCC area as 5.1% of all trips
- Public transport mode share in the TCC area is expected to increase further from 5.1% to 7.1% of all trips and 11.5% of journeys to work with an expanded priced parking zone in Tauranga City, plus cheaper ($1) bus fares (Base ++)
- The image above demonstrates the number of people that would need to be moved by public transport in the TCC and WBoP areas respectively to achieve 10, 20, 30 and 50% public transport mode share scenarios in 2063. This demonstrates the significant level of uptake in public transport use that would be required to achieve higher mode share scenarios by 2063.



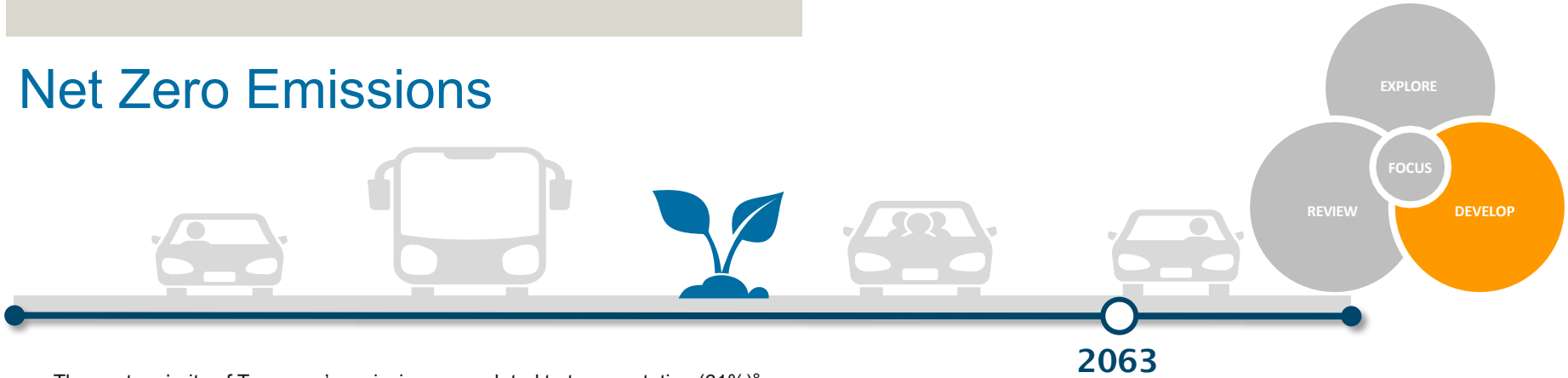
Benchmarking Mode Share

The share of current travel by public transport, walking and cycling varies across cities, due in part to geography, and different urban planning and transport policies over time. Overall patterns are similar as shown below, other than in Wellington, which has a much higher rate of active and public transport use.

International research suggests that mode share scenarios of 20-30% percent are achievable, based on a review of mode splits for comparable sized European cities. Mode share targets are currently being developed for high growth urban centres in New Zealand.



Net Zero Emissions



- The vast majority of Tauranga's emissions are related to transportation (61%)[8]
- It is estimated that 97% of transport emissions in Tauranga are from road transport, and come from the use of petrol, diesel and LPG for vehicle transport
- Tauranga's per capita emissions for transport are higher than Wellington's and Dunedin's, possibly due to lower levels of commuter public transport trips

The Climate Change Response (Zero Carbon) Amendment Bill Act if enacted will provide a framework by which New Zealand can develop and implement clear and stable climate change policies.

The draft legislation sets a series of emission targets, including a reduction in greenhouse gas emissions to net zero by 2050. This will contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels. To achieve these future emission reduction targets there is a need to achieve significant mode shift away from private car trips in the WBoP sub-region.

A further test has been undertaken to determine the mode shift required to achieve net zero increase in vehicle emissions.

This has been assumed to mean no increase in traffic between 2018 and 2063. Some ways of achieving this could be:

- If excess car trips divert 50% to walking and cycling and 50% to public transport. This would need a public transport mode share of 18% in 2063 to avoid an increase in emissions. This scenario is achievable if average commuting distances are reduced by implementing land use changes that promote densification. This will lead to active modes and public transport being more attractive to people.
- If car occupancy increases from 1.23 to 1.5, 50% of any excess traffic diverts to walking and cycling and 50% to public transport.
  This would need a public transport mode share of 10.5%. This scenario is achievable if interventions such as special vehicle lanes (HOV, Bus lanes) are implemented, coaxing more people into ridesharing and/or using public transport. Reducing average commuting distances by implementing land use changes that promote densification will lead to active modes being more attractive to people.
- If car occupancy increases from 1.23 to 1.3, and 30% of the fleet is electric powered, and all of the excess traffic diverts to public transport.
  This would need a public mode share mode share of 6%. According to a report from the MoT, electric vehicles are expected to make up 40% of the fleet in New Zealand by 2039/40*. Additionally uptake in walking and cycling as well as interventions such as special vehicle lanes (HOV, Bus lanes) will influence the increase in modal shift and average car occupancies which will help achieve emissions targets.

* https://www.transport.govt.nz/assets/Uploads/Research/Documents/b41c266676/GOTO-Future-State-A4.pdf (page 70)

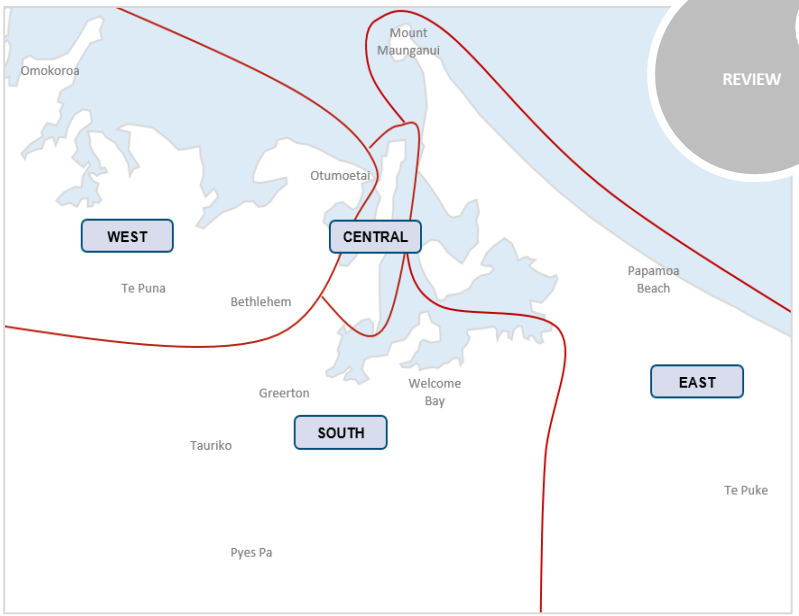
Growth & Triggers

Sector Growth Analysis

To better understand the potential number of people that could be moved by public transport and inform the development and phasing of potential interventions, the following analysis provides an overview of the expected growth in population within four broad sectors in 2063.

Analysis of future dwelling and employee growth by sector is provided at Appendix C.

The map opposite shows the broad sectors that have been used for the analysis provided below and on the next slide.



Population Growth

The table below shows the expected growth in each sector between 2018 and 2063. The data indicates that the south and east sectors are expected to experience the largest growth in population, with the south sector increasing by an average of 1.3% per annum and the east by 0.8% per annum.

Analysis on the sequencing and scale of the growth shows that growth is forecast to increase first in the east sector between 2021 and 2026 (additional 6,308 people), followed by the south between 2031 onwards (increasing by over 6,000 people between 2031 and 2053). This suggests that the greatest opportunity to increase public transport mode share would be to target the east sector, followed by the south sector.

	2018	2021	2026	2031	2036	2043	2053	2063	% growth in relation to total growth
West	54,763	56,976	60,113	62,621	64,369	65,569	67,428	68,539	17%
South	46,832	49,010	52,611	57,717	64,081	71,023	77,293	83,193	**46%**
Central	9,293	9,560	9,854	9,979	10,104	10,365	10,915	11,606	3%
East	64,596	68,406	74,714	79,293	83,149	87,979	90,378	91,184	**34%**
Total	**175,485**	**183,952**	**197,291**	**209,610**	**221,703**	**234,936**	**246,014**	**254,522**	**100%**

Origin – Destination Demand Matrices

Sector to Sector Demand Analysis

To better understand the potential number of people that could be moved by public transport and inform the development and phasing of potential interventions, the following analysis provides an overview of the primary destinations for **people** travelling between four broad origin and destination sectors in 2063 AM peak.

The analysis has been undertaken for three future scenarios, for the 2063 AM peak period:

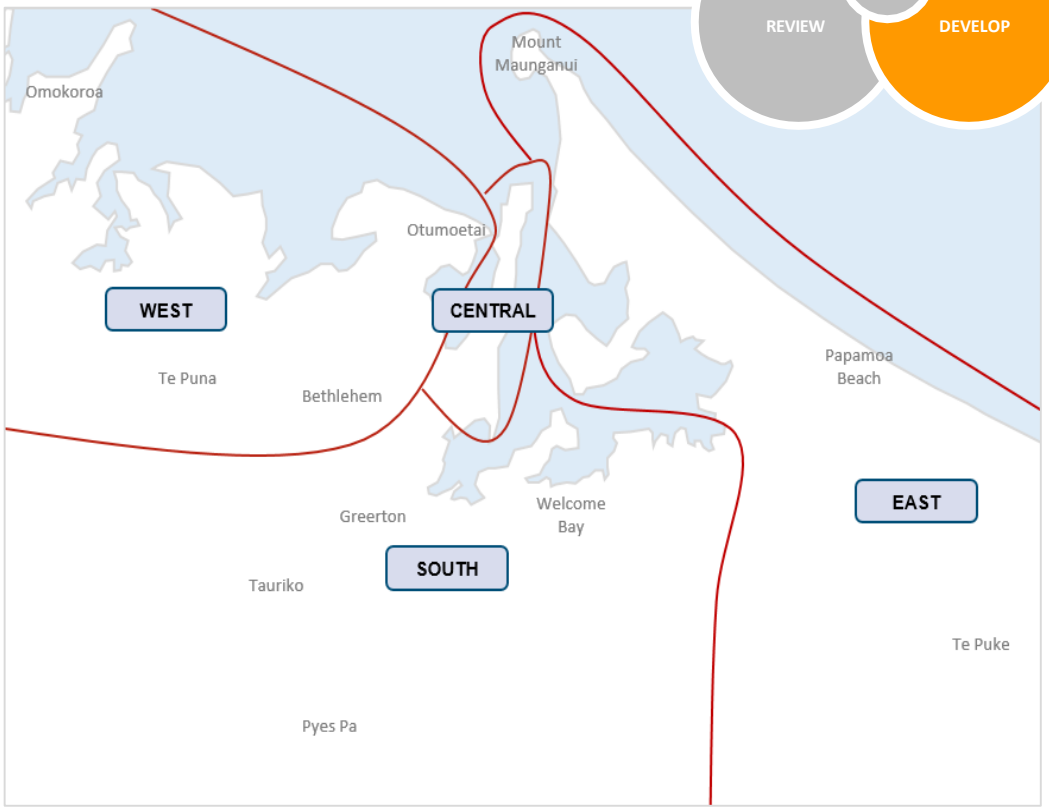
- **Base case** = 4.4% TCC public transport mode share (6.4% TCC public transport mode share for journeys to work)
- **Base ++** = 7.1% TCC public transport mode share (11.5% TCC public transport mode share for journeys to work)
- **Assumed 20%** = TCC public transport mode share scenario (public transport proportionally increased from Base ++ scenario, 32.3% TCC public transport mode share for journeys to work).

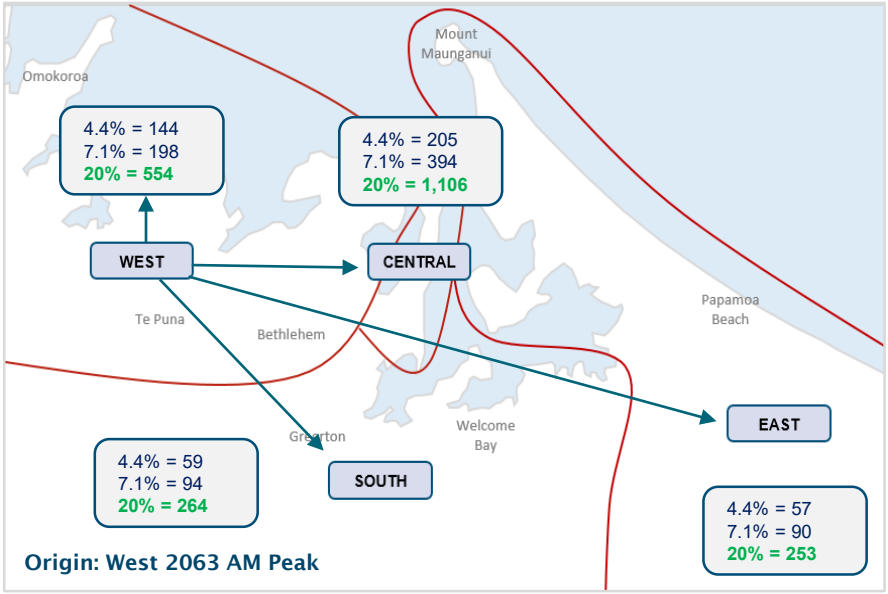
For the purpose of this work 20% public transport mode share has been assessed and analysed. This is an arbitrary figure that has been used to test the impacts of a significant increase compared to current usage.

The map opposite shows the broad sectors that have been used for the analysis provided on the next slide.

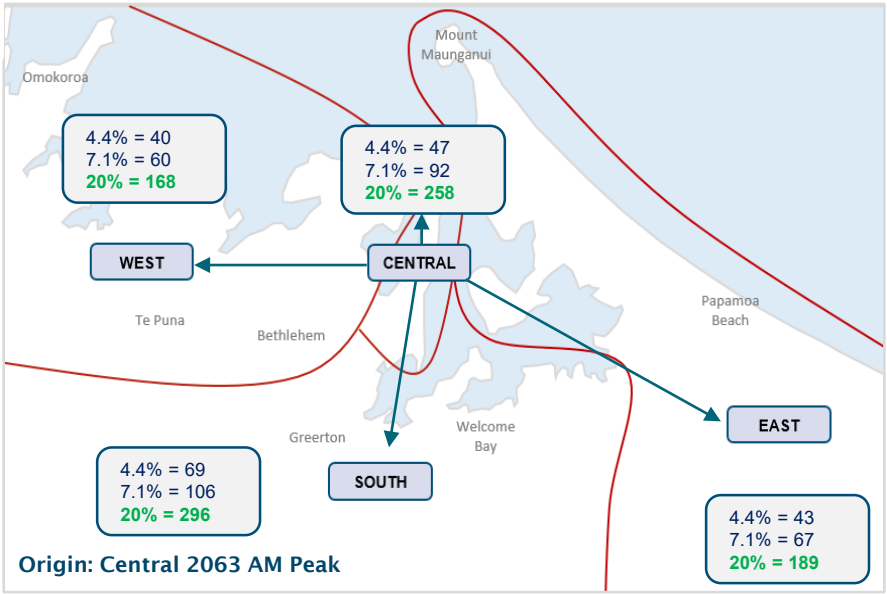
The analysis on the next slide provides a high level overview of potential demand (people movements) for public transport services in 2063 AM peak. It shows the theoretical demand between each of the origin and destination sectors for each of the three future scenarios.

Growth rates have been applied at a very broad level for the purpose of this analysis (i.e. assuming population growth is applied equally across each of the sectors).

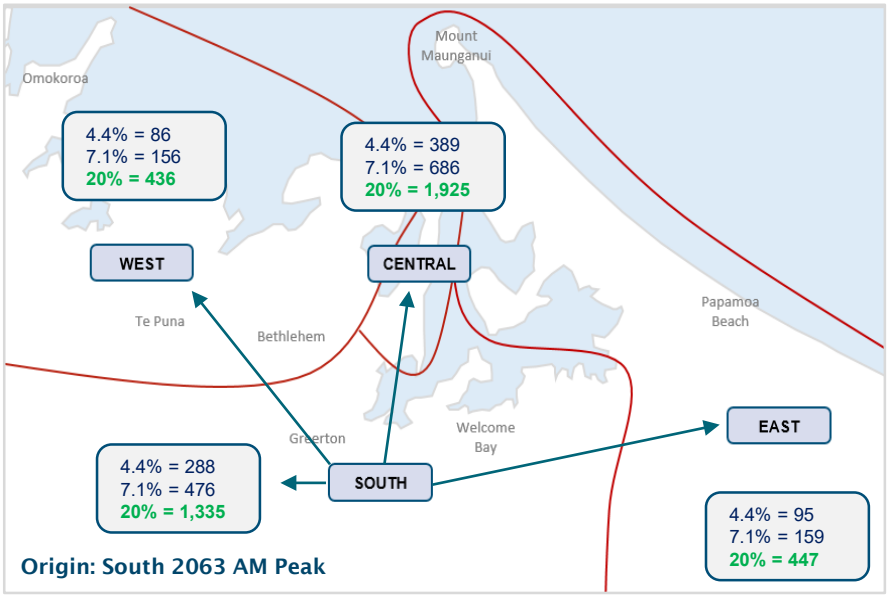




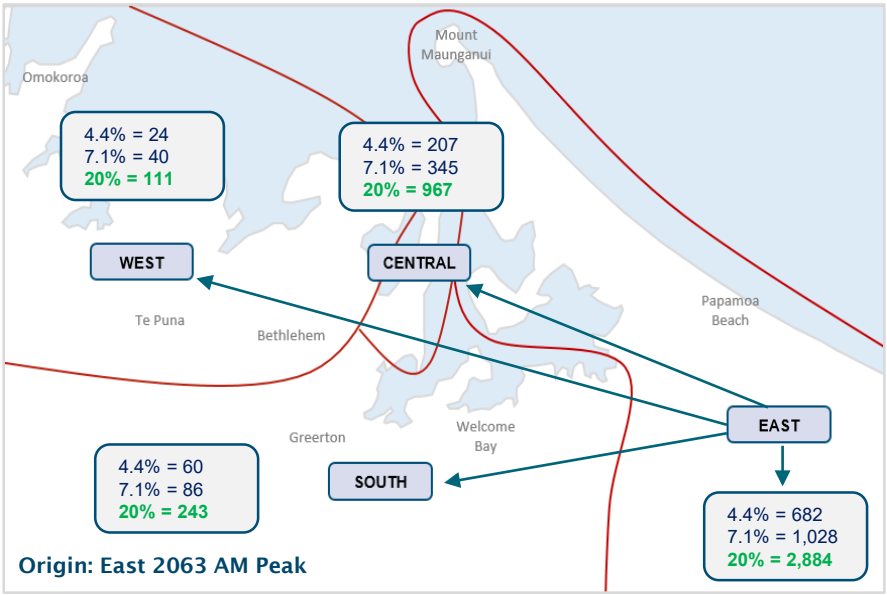
Origin: West 2063 AM Peak



Origin: Central 2063 AM Peak



Origin: South 2063 AM Peak



Origin: East 2063 AM Peak

Public Transport Frequencies

Staging of Public Transport Interventions

The demand matrices shown on the previous slide have been analysed to determine the public transport service requirements. It has been assumed that a standard bus would accommodate an average capacity of 35 people and a double decker 100 people.

Should the level of public transport demand reach the need for a bus every 2.5 minutes (with double decker buses) then it may be more appropriate for this demand to be serviced by a higher capacity mode. With a frequency of equal or greater than a bus every 2.5 minutes, dedicated corridors would be required due to the number of services operating as shown on the next slide.

The tables below provides an overview of the potential demand for public transport and service frequencies for each mode share scenario based on a standard bus capacity of 35 people and a double decker capacity of 100 people. The Central sector is identified as a key destination, however, has a relatively low demand in the AM peak from a trip origin perspective.

Note: The first number in each cell below indicates the number of buses required per hour to service the forecast demand for public transport, the second number indicates the required public transport service frequency (e.g. 3/20 = 3 buses per hour or a bus every 20 minutes during the AM peak period).

Base Case (4.4%) 35 people per bus

	West	Central	South	East
West	4/15	6/10	2/30	2/30
Central	1/60	1/60	2/30	1/60
South	2/30	11/5.5	8/7.5	3/20
East	1/60	6/10	2/30	19/3.2

Base ++ (7.1%) 35 people per bus

	West	Central	South	East
West	6/10	11/5.5	3/20	3/20
Central	2/30	3/20	3/20	2/30
South	4/15	20/3	14/4.3	5/12
East	1/60	10/6	2/30	29/2.1

Assumed 20% 35 people per bus

	West	Central	South	East
West	16/3.8	32/1.9	8/7.5	7/8.6
Central	5/12	7/8.6	8/7.5	5/12
South	12/5	55/1.1	38/1.6	13/4.6
East	3/20	28/2.1	7/8.6	82/0.7

Base Case (4.4%) 100 people per bus

	West	Central	South	East
West	2/30	3/20	1/60	1/60
Central	1/60	1/60	1/60	1/60
South	1/60	4/15	3/20	1/60
East	1/60	3/20	1/60	7/8.6

Base ++ (7.1%) 100 people per bus

	West	Central	South	East
West	2/30	4/15	1/60	1/60
Central	1/60	1/60	2/30	1/60
South	1/60	7/8.6	5/12	2/30
East	1/60	4/15	1/60	11/5.5

Assumed 20% 100 people per bus

	West	Central	South	East
West	6/10	12/5	3/20	3/20
Central	2/30	3/20	3/20	2/30
South	5/12	20/3	14/4.3	5/12
East	2/30	10/6	3/20	29/2.1

Public Transport Programme Development

The analysis on the previous slide shows that standard or double decker buses are likely to be able to adequately service the anticipated demand for public transport in both the Base Case and the Base ++ scenarios. However, in the assumed 20% WBoP public transport mode share scenario, one of the origin-destination sectors exceeds the need for a double decker bus every 2.5 minutes, suggesting that higher capacity mode is likely to be required to meet the anticipated level of demand should public transport mode share reach 20% (also dependent on the exact location of the origin and destination and attractiveness of the services provided).

The analysis suggests that the greatest level of demand for public transport is anticipated for people travelling within the eastern sector. This is followed by people travelling from the southern sector to the central sector, supporting the earlier analysis on forecast growth within each sector.

Higher capacity modes are also a way to stimulate land use around public transport hubs. Increased frequencies and/or larger buses could be an alternative response to meet future increases in public transport demand over time. This data provides a useful indication of where future demand is likely to warrant the investigation of higher capacity modes. The table below illustrates typical thresholds for different types of public transport modes and infrastructure provision.

In addition, commentary on the effects of different densities is provided at Appendix C.

Public Transport Typologies

WBOP

Modal Characteristics	Bus	Maximum Bus Priority	Busway	Tram	Light Rail	Heavy Rail
Maximum capacity	2,500 pphpd	4,000 pphpd	6,000 pphpd	12,000 pphpd	18,000 pphpd	30,000 + pphpd
Capital cost per route km	< £1m	£1m - £2m	£1m - £20m	£15m - £20m	£10m - £45m	£45m - £250m
Operating cost per passenger place km	3.8 p – 8.8 p	2.5 p – 5.8 p	2.5 p – 5 p	1 p – 2.1 p	1 p – 1.4 p	1.5 p – 1.8 p
Average speed	10–14 km/hr	14–18 km/hr	15 – 22 km/hr	15 – 22 km/hr	18- 40 km/hr	18- 40 km/hr
Reliability	Improving	Medium	Good	Medium to Good	Good	Very Good
Roadspace Allocation	Mixed running with traffic	Mixed running and on-road bus lanes	Totally segregated alignment required	Mixed running and on-road tram lanes and totally segregated where available	Very largely on segregated alignments	Totally segregated
Theoretical Land Use 'best fit'	Best suited to lower density dispersed urban form	Best suited to lower density dispersed urban form	Best suited to high demand corridors in medium to low density areas	Higher densities of development, or connecting denser urban centres	Higher densities of development, or connecting denser urban centres	Very high density urban development

Source: Transport for London

Public Transport Competitiveness

Generalised Cost

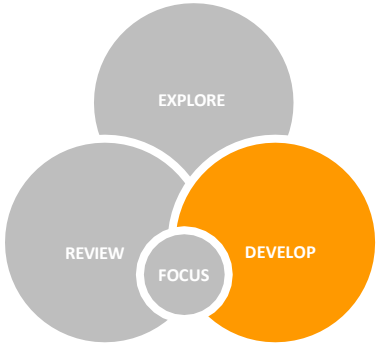
Analysis has been undertaken to calculate the total forecast times and costs (all expressed as travel time e.g. minutes) for travel in 2063 AM peak. This analysis has been undertaken for five origin and destinations that form the main public transport corridors.

The findings below demonstrate how public transport is unlikely to be competitive or an attractive option without off-site car parking charges and improved travel times. Even with a nominal $10 off site parking charge, some of the routes shown would still struggle to compete with car use, without the implementation of bus priority interventions. On the routes where public transport is still theoretically slower, additional priority would be required to improve public transport travel times (compared to general traffic for example either public transport quicker, or public transport quicker and general traffic slower). Alternatively we have tested an increase in off site parking charges to $15, which the analysis shows would make public transport theoretically more competitive than private car on all five routes.

The most competitive routes (in terms of comparable travel times) in the 2063 AM peak period, are between Papamoa and Tauranga and Mount Maunganui and Tauranga, where public transport is expected to be more competitive than SOV trips with a $10 parking charge (minimum charge alongside a reduction in the availability of free parking on the fringes). For the other routes some extra form of incentive to travel by bus (such as travel time priority, or a change in the relative costs of bus versus car travel) or an increase in parking costs to a minimum of $15 would be required to make public transport more attractive than SOV trips.

Trip Link	Car (SOV) Free parking at work	Car (SOV) Off-site parking Free	Car (SOV) Off-site parking $10	Car (SOV) Off-site parking $15	HOV passenger	Bus / Park and Ride	Bus / Park and Ride compared with Car (SOV) Off –site parking $10	Bus / Park and Ride compared with Car (SOV) Off –site parking $15
Papamoa - Mount Maunganui	34.6	44.4	**57.9**	**67**	37.8	**63.5**	**+ 5.6 minutes**	**- 3.5 minutes**
Papamoa – Tauranga	39.5	49.5	**62.7**	**71.9**	42.1	**53.4**	**- 9.3 minutes**	**- 18.5 minutes**
Mount Maunganui - Tauranga	14.2	24.2	**37.5**	**46.6**	23.2	**35.4**	**- 2.1 minutes**	**- 11.2 minutes**
Greerton - Tauranga	14.8	24.8	**38.1**	**47.2**	24.1	**39.7**	**+ 1.6 minutes**	**- 7.5 minutes**
Omokoroa - Tauranga	31.2	41.2	**54.5**	**38**	38	**59.3**	**+ 4.8 minutes**	**- 4.3 minutes**

Public Transport Programme Development



Connected Nodes

The consultant team have considered the insights collected from staff from the UFTI partners and the analysis that has been undertaken to develop an indicative programme of phased interventions that is illustrated on the following slide and detailed below.

Phase 1 (east sector)

Phase 1 focuses on public transport and land use improvements for the east sector to accommodate the additional growth that is forecast from 2021:

- A high capacity public transport route between Te Tumu, Papamoa, Bayfair and the City
- Secondary public transport feeder services connecting Mount Maunganui and the City and Te Puke with Wairakei
- Park and Ride at Te Puke and Te Tumu to boost patronage of the high capacity route
- Higher density developments and high growth around key hubs
- Parking management in the central City ($10-15 charge for off-site parking)

Phase 2 (south sector)

Phase 2 focuses on public transport and land use improvements for the south sector to accommodate the additional growth that is forecast from 2031:

- A high capacity public transport route between Pyes Pa, Greerton, the Hospital and the City
- Secondary public transport feeder service connecting Tauriko and Welcome Bay with the high capacity corridor and the City.
- Park and Ride at Tauriko and Pyes Pa to boost patronage of the high capacity route
- Higher density developments and high growth around key hubs

Phase 3 (west sector)

Phase 3 focuses on public transport and land use improvements for the west sector from 2041:

- Secondary public transport services connecting Omokoroa, Te Puna and Bethlehem and an Otumoetai loop connecting with the City
- Park and Ride at Te Puna and Omokoroa to boost patronage of the public transport route
- Growth around key hubs

A toolbox and description of the proposed public transport interventions is included in Appendix C.

Public Transport Programme Development

Connected Nodes

= Primary High Capacity PT Route
= Secondary PT Route
= Rail Line
= Park and Ride
= Parking Management (pricing)
= High Growth Areas (TOD's)
= Higher Densities (adjacent to PT)

Omokoroa
Mount Maunganui
Otumoetai
Bayfair
Tauranga
Bethlehem
Te Puna
Papamoa
Wairakei
Te Tumu
Te Puke
Paengaroa
Welcome Bay
Greerton
Tauriko
Pyes Pa

Phase 3 from 2041

Phase 1 from 2021

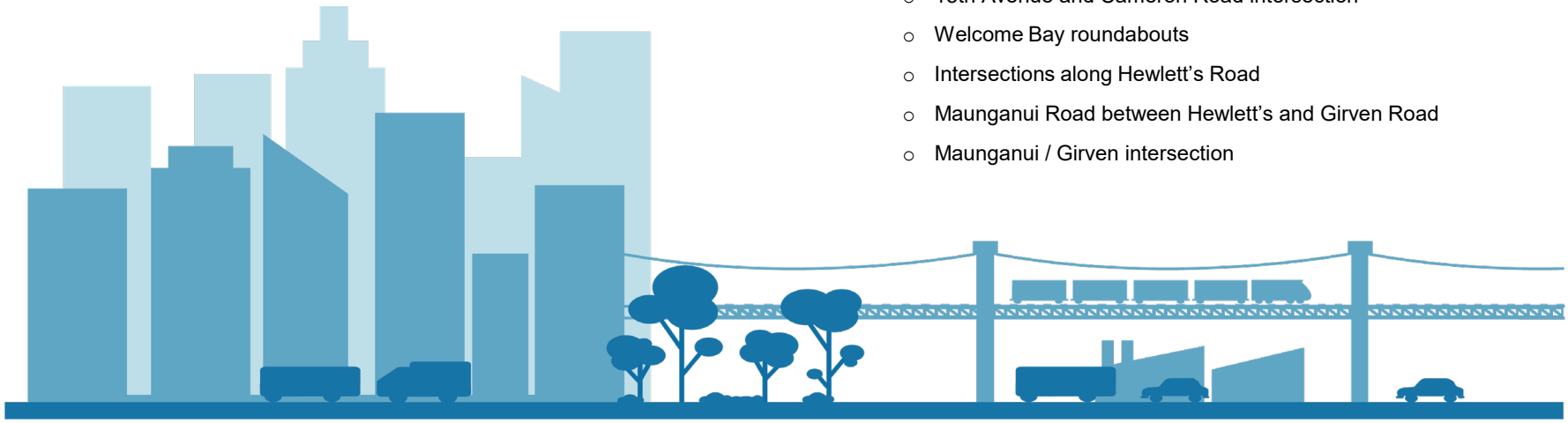
Phase 2 from 2031

Wider Considerations

A significant amount of existing work has already been undertaken to understand the key transport problems and outcomes sought for the WBoP sub-region.

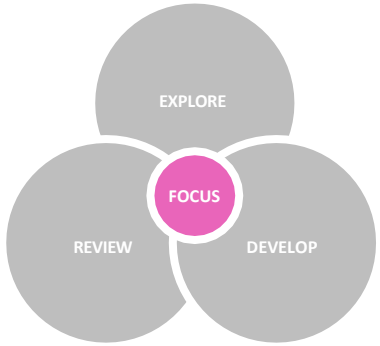
This includes a recent draft Transport Model Update report (Programme 8.2 TTSM Model Updates), dated 2 October 2019. This report details the transport model that has been developed to attempt to replicate the transport system in the Tauranga area. The report highlights:

- Higher public transport mode share may be achieved on longer trips where buses have more opportunity to compete with car
- Higher parking prices or other penalties for driving, travel behaviour change initiatives that support mode shift and improvements to first and last mile travel such as e-bikes and scooters, would support public transport mode shift
- Current land uses close to the existing railway line utilised by freight, are not conducive to passenger rail trips. In particular, residential density near rail stations is very low
- Considering intensification around rail stations (transit oriented developments) and micro-mobility opportunities to improve first and last mile connections is recommended to optimise a passenger rail service
- The need to investigate park and ride facilities
- Mixed use development to reduce the number and distance of trips
- Reducing levels of car ownership per household and increasing vehicle occupancy rates
- The report highlights the potential future use of ferry/water services to provide an alternative to road and rail passenger services
- When considering and testing future public transport scenarios it is also important to consider the theoretical capacity of the corridors. As an example in the base ++ model scenario ($1 bus fares, expanded coverage and larger paid parking zone in Tauranga city), Cameron Road would have a 47% public transport mode share, reducing capacity for general traffic and other modes
- The draft Programme 8.2 TTSM Model Updates Report provides an overview of forecast traffic levels of service and highlights the worst performing corridors for general traffic, which include:
    - 15th Avenue and Cameron Road intersection
    - Welcome Bay roundabouts
    - Intersections along Hewlett's Road
    - Maunganui Road between Hewlett's and Girven Road
    - Maunganui / Girven intersection



Summary and Recommendations

Summary and Recommendations



Summary

This report has built on the extensive work undertaken to date. It has developed an understanding of key customer insights and outlines the opportunities to make a significant shift in mode share over the next 10, 20 and 30 years to help improve environmental, social and economic outcomes for the WBoP sub-region.

Evidently, travel times plays a key role in the overall satisfaction of an individual's commute and the attractiveness of public transport use over car use. Shorter public transport travel times will likely encourage a greater mode shift. However there are several other factors affecting people's travel choices, such as frequency, reliability and cost (relative to that by other modes).

A workshop was undertaken with staff from UFTI partners to better understand the current and likely future constraints, challenges and opportunities. This work highlighted the importance of transport and land use integration in order to develop the density and demand required for higher capacity, high frequency public transport services. Along with wider policy and transport interventions to improve the competitiveness and attractiveness of public transport in comparison with other modes.

Travel demand forecasts have been developed by Flow Transportation Specialists utilising the latest version of the Tauranga Transport Model. A review of broad sector to sector origin and destination demand matrices in the 2063 AM peak indicate the highest demand will originate from the eastern and southern sectors.

High level analysis has been undertaken to determine the number of public transport services, frequency and supporting infrastructure that is likely to be required to accommodate demand for a range of future public transport mode share scenarios.

This analysis demonstrates the potential trigger for higher capacity modes if demand for public transport was to increase to 20% mode share by 2063. The analysis suggests that the greatest level of demand for public transport is anticipated for people travelling within the eastern sector. This is followed by people travelling from the southern sector to the central sector. This work suggests that a phased approach is required to progress towards the desired future state, starting with bus priority and working towards higher capacity modes and supporting measures that include land use intensification, Park and Ride and parking management in the central City.

Shaping urban form	Making shared and active modes more attractive	Influencing travel demand and transport choices
Encouraging good quality, compact, mixed-use urban development ***will result*** *in* densities that can support rapid/frequent transit (and vice versa), shorter trips between home and work/education/leisure, ***and*** safe, healthy and attractive urban environments to encourage more walking and cycling	Improving the quality and performance of public transport, and facilities for walking and cycling will enable more people to use them. This can involve both ***optimising the existing system*** (e.g. through reallocating road space), ***investment*** in new infrastructure and services, and providing ***better connections*** between modes.	Changing behaviour may also require a mix of incentives and disincentives (or 'push' and 'pull' factors) to either discourage use of private vehicles (by making them less attractive than other options) or making people better aware of their options and incentivising them to try something new. This may include parking policies, road pricing, travel planning and education.

Assumptions

Assumptions

This report has been prepared by GHD for UFTI on behalf of Smart Growth and may only be used and relied on by UFTI for the purpose agreed between GHD and UFTI.

GHD otherwise disclaims responsibility to any person other than UFTI arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by UFTI and others who provided information to GHD (including government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Level 3 138 Victoria Street Christchurch Central 8013 New Zealand PO Box 13468 Christchurch 8141 New Zealand, +64 3 378 0900, advisory@ghd.com.

Rev.No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
01	A Smith	L Dowdle		L Dowdle		31.10.2019
02	A Smith	L Dowdle		L Dowdle		22.11.2019

In preparing this report GHD have assumed the following:

- For the purpose of this analysis it has been assumed that the growth in demand for public transport is evenly distributed. Further analysis of land use growth patterns and timing of future development would be required to refine this analysis.
- It is important to note that the Beca Programme 8.2 Transport Model Update report is draft, so the forecast numbers should be taken as indicative only.
- The assumed 20% public transport mode share scenario test is not based on any modelling – as noted above it is based on factoring up all public transport demands from the model test that gave the highest public transport demands.

References

[1] 2013 Census Quick Stats about a place: Tauranga City: http:Census/2013-census/profile-and-summary-reports/quickstats-about-aplace.aspx?request_value=13878&tabname=Transport

[2] Bay of Plenty Passenger & Freight Rail Phase 1 Investigation, Channeled Planning and Contracting, 2019

[3] Bus Patronage Growth Initiatives, Discussion Paper 2: Behaviour Change, MRCagney

[4] Western Bay of Plenty Public Transport Blueprint, Programme Business Case, Beca, 2017

[5] Travel Demand Management in Tauranga, Presentation, NZTA, 2019

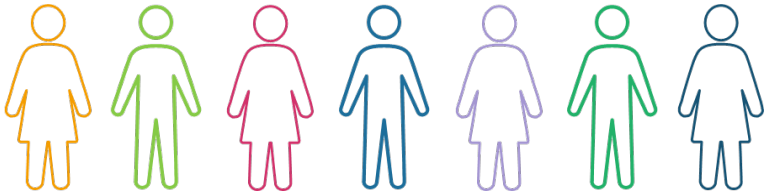
[6] Technical Note 7: Park and Ride – Tauranga Parking Strategy, MRCagney, 2019

[7] Travel Demand Management in Tauranga, Presentation, NZTA, 2019

[8] https://www.tauranga.govt.nz/our-future/strategic-planning/strategic-focus/environment-strategy/tauranga-community-carbon-footprint

Appendix A

Insights



User Experience

An interactive session was undertaken with staff from UFTI partners in Tauranga in October 2019 to help inform the development of this Mode Shift Plan. A set of fast paced and focused exercises moved from insights to ideas on specific actions and priorities to help achieve the desired mode shift outcomes.

Exercises were undertaken in a mixture of group and individual tasks and were largely self facilitated to remove any inadvertent bias and allow participants to debate and discuss their ideas freely.

Common themes that emerged from the exercise emphasised the importance of:

- Public transport travel time (compared to other modes)
- Frequency of public transport services
- Ease of services (for example, minimising transfers)
- Reliability of public transport
- Cost (comparative to other modes)

Airport Flyer Auckland

Dedicated bus lanes help avoid congestion and the service is cheap compared to other options.

Tauranga

Used public transport to attend the Climate Change Strike as buses were free. Drove to Bayfair to avoid a transfer, buses too slow.

Auckland

Used public transport everyday in Auckland as most efficient option.

Tauranga

Drove to Bayfair to avoid transfer. Driver grumpy but efficient service, however eight minutes late to work.

Sydney to Bondi

Efficient service every 7 minutes, but was at capacity during peak times.

Airport Flyer Auckland

Quick and frequent service, the longest wait is ten minutes. The bus has Wi-Fi and drivers very friendly to tourists. Cheap option compared to price of taxis in Auckland.

Tauranga

Kids made a trip to visit grandparents, but had to drive as the bus was early and next one was an hour wait.

Tauranga

Used a bus for a family day at the rugby, travelled with young kids. Bus driver was very friendly. Fare of $7 return on the bus, but could have driven and parked for free.

Tauranga

Used the bus today, it was a bit late but overall a good experience.

Wellington

Recently took a bus in Wellington, left home on a Saturday, bus runs every 15 minutes so didn't need to check a timetable. No free weekend parking in CBD. Double decker bus was fun, but slower than usual as the clearways were not operating.

Appendix B

Papamoa – Mount Maunganui - City

In groups, the participants were asked to select a key corridor and identify the current and future opportunities, challenges and constraints. The following statements represent opinions expressed by the participants.

LAND USE / BUILT & URBAN FORM

A. Blake Park is the only hockey turf pitch available to the public

B. Matapihi rail bridge could provide an opportunity for an alternative harbor crossing

C. Important to consider the location of retirement homes

D. Concern about the impact of growth on the transport system in Papamoa, Te Puke and Rangiuru

E. Housing is cheaper on the urban fringe but travel times on the bus are longer so people drive

F. Need to consider inland ports – (Ruakura in Waikato and Paengaroa)

TRAVEL CHOICE

G. Taxi or car seen as the only option from the airport

H. Bus transfers increase journey times

I. Lack of direct off road cycle path from Papamoa to City

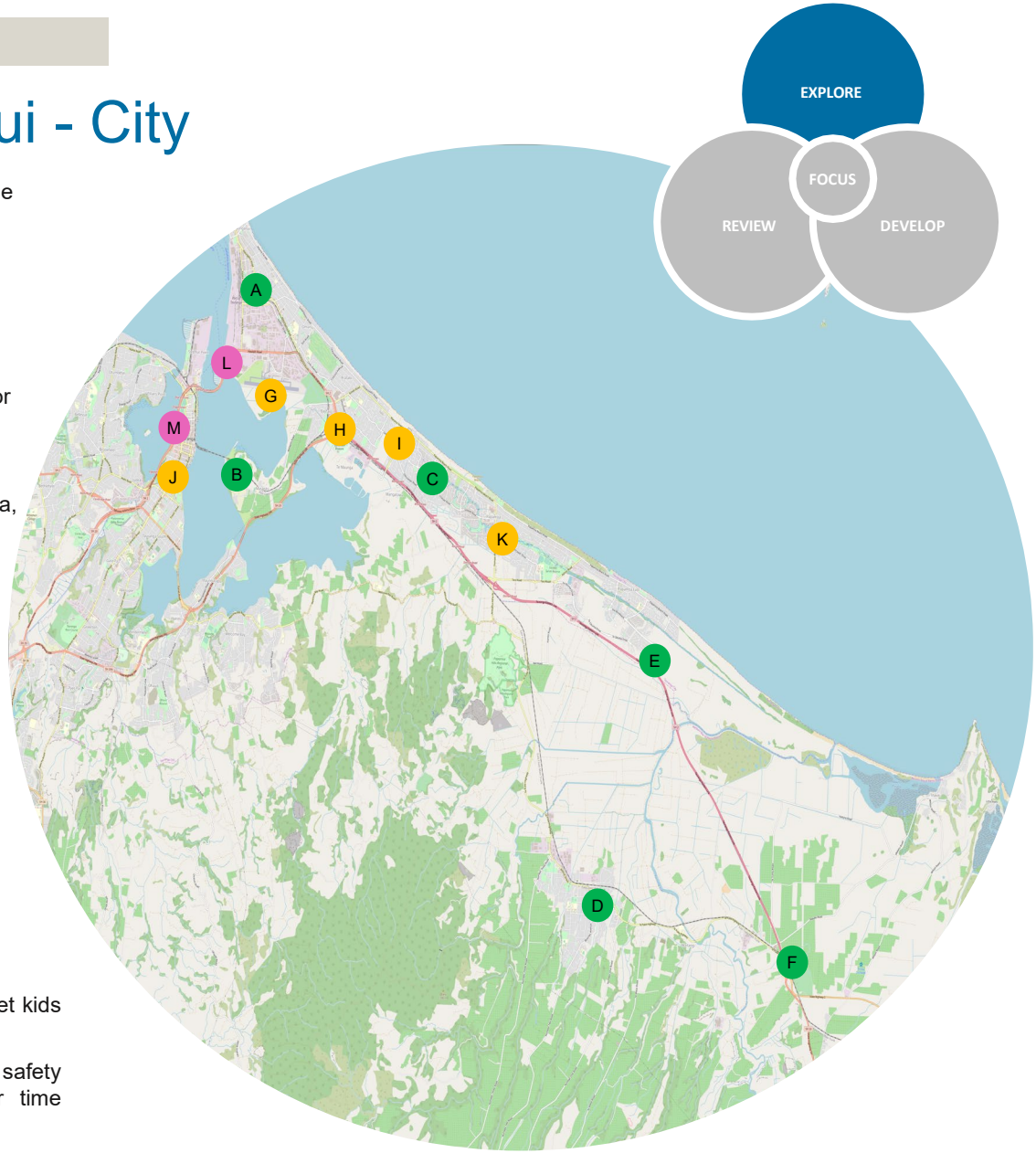
J. Lack of evening bus services to get home

K. Need more buses that are quicker

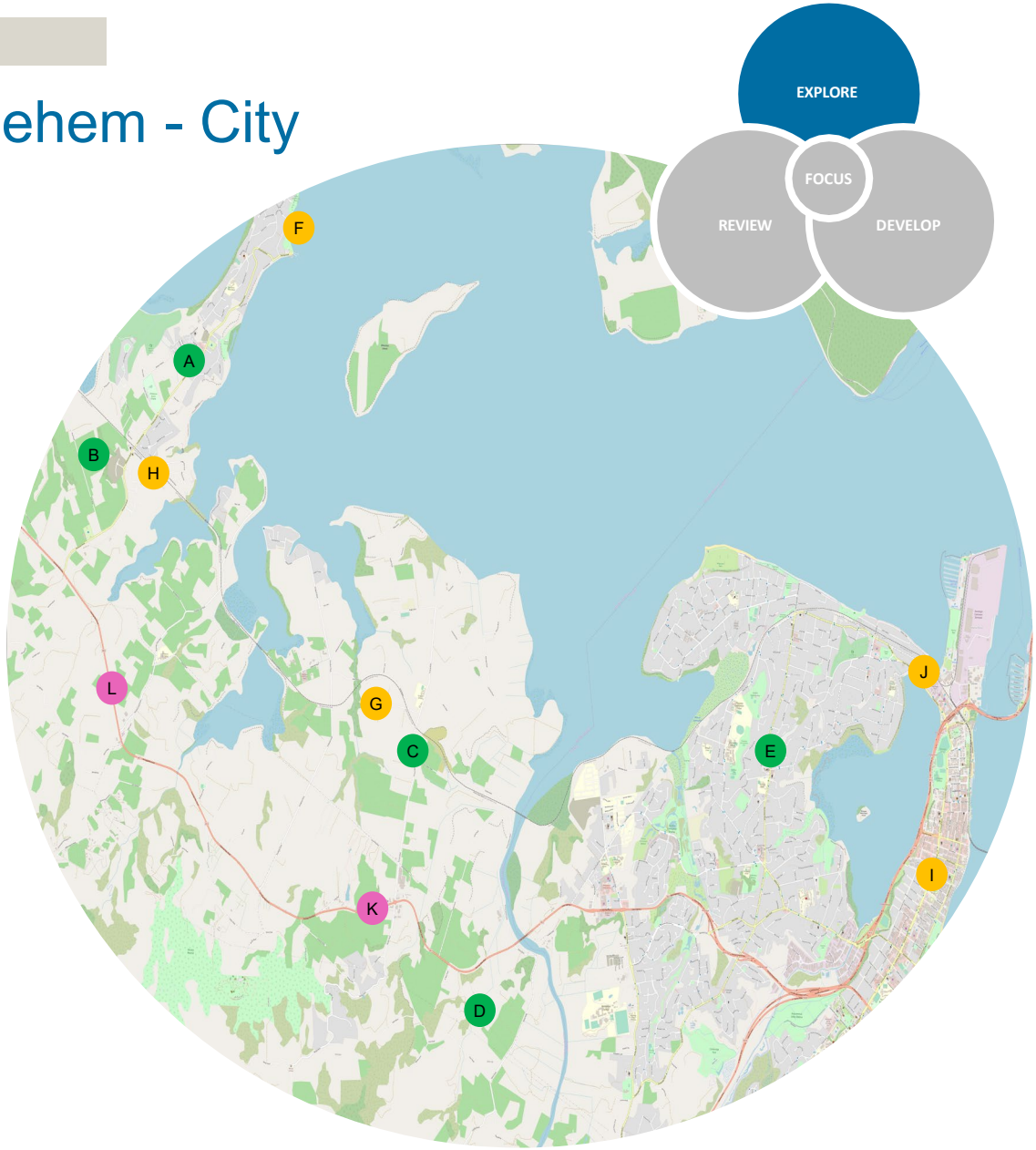
SAFETY / WELLBEING

L. Feel unsafe cycling on Hewletts Road, too many buses and trucks to let kids cycle to school

M. Bus or bike from the Mount Maunganui to City too much traffic and safety issues – no parking management (for example, paid parking or time restrictions) leads to vehicles circling looking for the best park



Omokoroa – Te Puna – Bethlehem - City



LAND USE / BUILT & URBAN FORM

A. Growth planned over the next 10-20 years (mainly Omokoroa)

B. An Omokoroa Structure Plan has been developed which includes a secondary school, commercial and industrial land uses

C. Opportunity for TOD's and Park and Ride facilities along the rail corridor to future proof for future passenger rail services

D. Likely intensification once Tauranga Northern Link opens, TNL may make it difficult for bus to compete with car trips in terms of travel times

E. Covenants in this area make intensification a challenge (Otumoetai)

TRAVEL CHOICE

F. Opportunity to consider ferry services in the future

G. Low catchment/densities for potential passenger rail services and TNL may remove the need

H. Opportunity to utilise the rail network for local passenger trips Omokoroa – City – Te Puke

I. Free or low cost parking around the City makes driving attractive

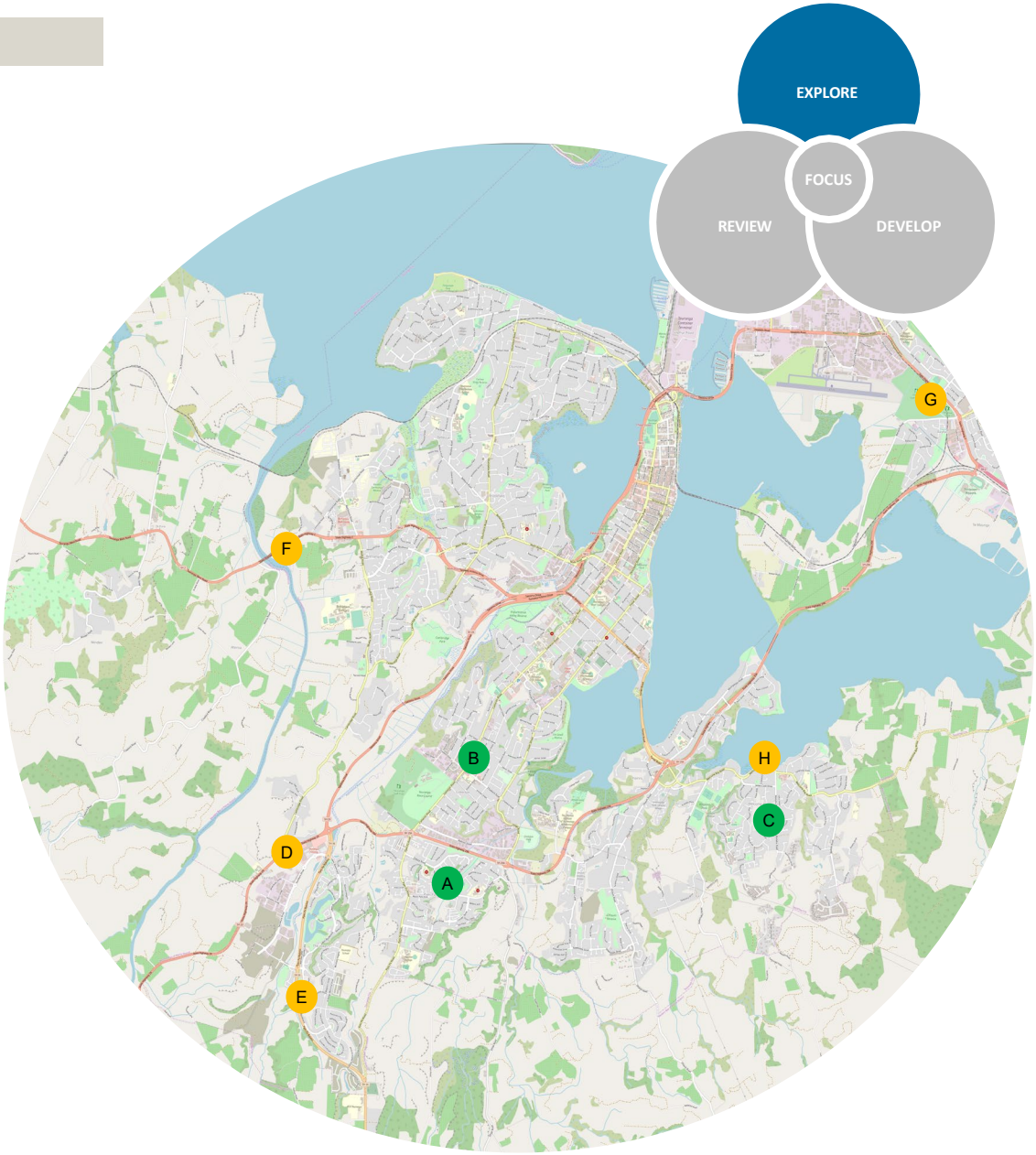
J. Walking/cycling around the estuary could be an attractive option from Omokoroa to the City

SAFETY / WELLBEING

K. SH network causes severance, making it difficult to access bus stops

L. A number of high risk intersections along SH2 corridor

Tauriko – Pyes Pa - City



LAND USE / BUILT & URBAN FORM

A. Greenpark is one of the largest primary schools (roll count) in New Zealand so generates high number of trips, mostly south of SH29

B. The college level education in this area are all specialist

C. Welcome Bay could benefit form more community centres and amenities such as schools and supermarkets

TRAVEL CHOICE

D. SH29/Cambridge Road identified as a bottleneck, increasing travel time

E. Poor bus service provision identified in this area

F. Lack of alternative modes along western corridors, low density makes public transport provision challenging

G. Buses get delayed in traffic on Golf Road, Maunganui Road roundabout and approaching the bus lanes on Hewlett's Road

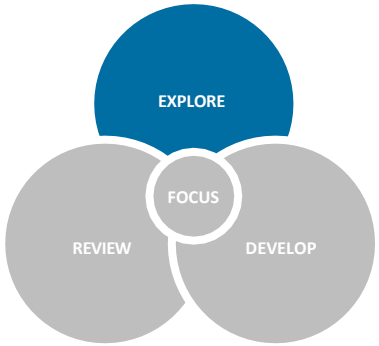
H. Opportunity to explore ferry services from Welcome Bay to the City

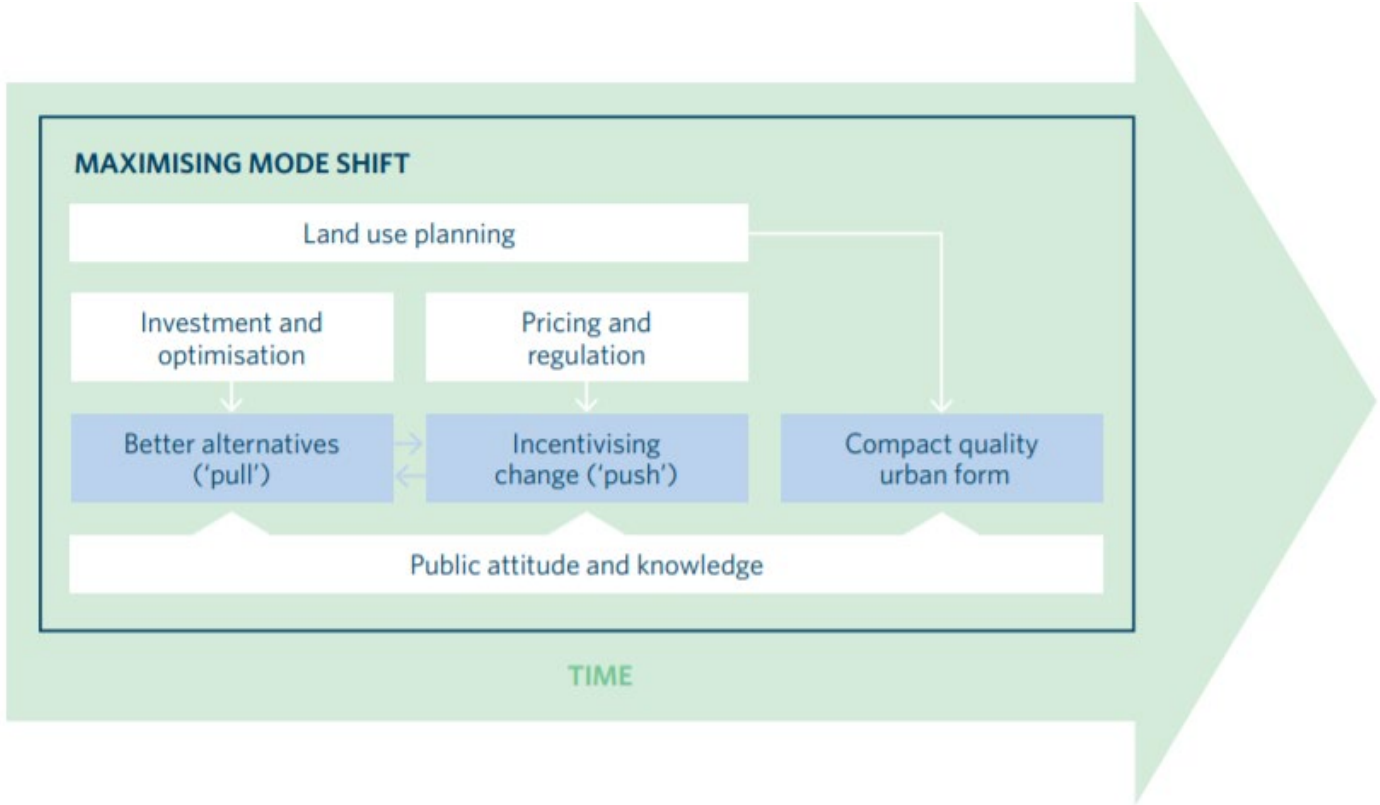
Summary of Insights

Attendees were asked to review the order and relationship between the proposed actions and critique whether they would most effectively deliver on customer expectations/needs and the mode shift sought over a 30 year period.

Feedback ranged from adjusting actions across each of the time periods, to the inclusion of additional actions that might be required to enable broader outcomes to be delivered.

Beyond what was included in the commentary, there were also discussion about the need to include non-infrastructure and capital related actions, such as educational programmes, incentives and policy actions as part of the programme.





Appendix C

Growth

Analysis of future dwelling and employee growth by sector is provided below. This supports the analysis provided on the previous slide regarding the timing and sequencing of growth.

The third sector highlighted by the data is the west sector, which experience steady ongoing growth and will likely generate high trip demand and opportunities for greater uptake of public transport.

The location of employee growth (i.e. the sector people are travelling to for work) is also projected to be higher in the east sector, followed by the west as shown below.

Dwelling Growth

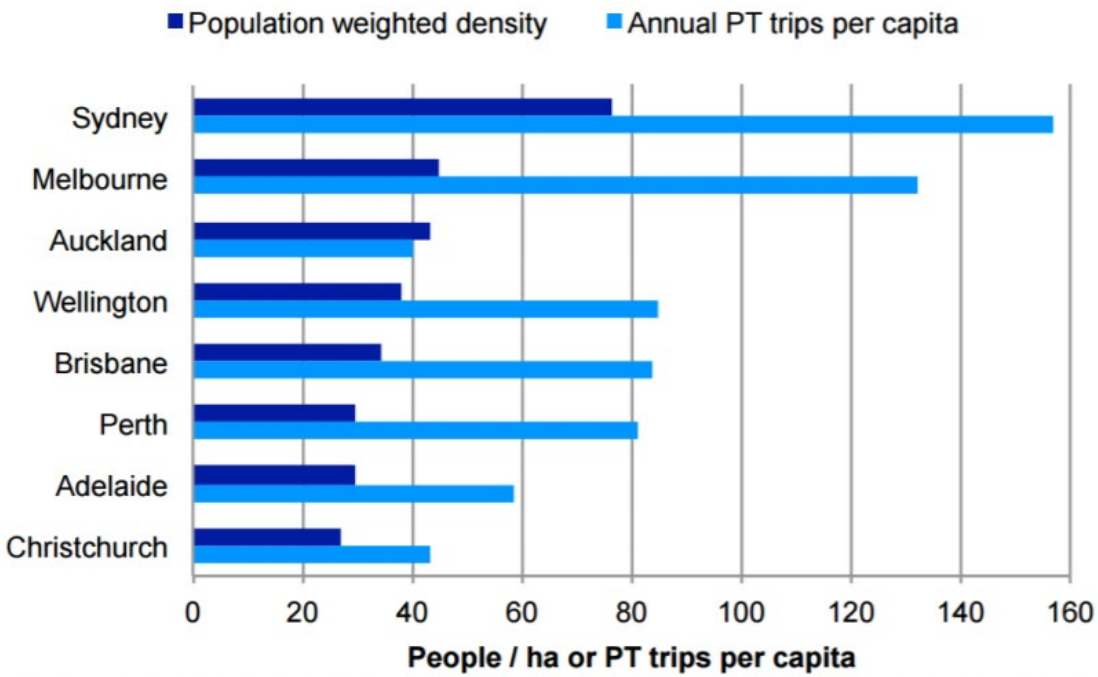
	2018	2021	2026	2031	2036	2043	2053	2063	% growth in relation to total growth
West	21,939	23,202	25,251	27,088	28,514	29,938	31,253	32,071	21%
South	17,728	18,999	21,153	24,149	27,681	31,293	34,323	37,282	**41%**
Central	3,909	4,039	4,271	4,515	4,765	5,092	5,581	6,148	5%
East	25,412	27,465	31,005	33,682	35,919	38,695	40,287	41,085	**33%**
Total	**68,988**	**73,704**	**81,680**	**89,434**	**96,880**	**105,018**	**111,444**	**116,586**	**100%**

Total Employees Growth

	2018	2021	2026	2031	2036	2043	2053	2063	% growth in relation to total growth
West	14,497	15,267	16,202	17,042	17,804	18,871	19,876	20,881	13%
South	14,389	16,766	19,210	21,830	24,411	27,449	28,661	29,767	**30%**
Central	21,874	22,586	23,822	24,944	26,204	27,967	29,029	30,092	16%
East	35,976	38,496	42,717	46,707	49,134	52,524	54,898	57,050	**41%**
Total	**86,736**	**93,114**	**101,951**	**110,524**	**117,553**	**126,811**	**132,464**	**137,790**	**100%**

Effect of Density

- Increased density within urban areas is positively associated with demand for public transport as shown below.
- Statistical analysis on 28 Californian communities found that VKT per household fell by 25% with a doubling in density.
- Similarly, national-level US research found that increasing density by around 40% decreased household VKT by 5%.
- SmartGrowth represents a shift in growth management approach for the WBoP from accommodating low density suburban residential development to a compact "live, work and play" concept, emphasising the importance of a liveable urban environment.



Source: Nunns P (2014) Population-weighted densities in New Zealand and Australian cities: A new comparative dataset. MRCagney Working Paper

Household Density (*)	Employee Density (*)	Effective Transport Mode
More than 40	More than 450	Rail
15-40	100-450	Bus
Less than 15	Less than 100	Car

- Per hectare
- Noting that walking and cycling are effective travel modes in all household densities

Toolbox of Interventions

Parking
Investigate parking controls such as time restrictions, pricing and redistribution from main arterials to side streets

Central City measures
Continued investigation into mode shift measures which incentivise greater use of walking, cycling, carpooling and public transport such as parking controls/incentives

Park and Ride
Investigate and implement Park and Ride facilities on the urban fringe to expand the reach of public transport services

Interchange Facilities
High quality facilities are proven to significantly reduce the impact of transfers

Training and education
Provide training and education to make commuters more comfortable with using alternative modes of transport
- Cycle training courses
- Bus information

Express public transport services
Additional express bus services targeting peak hour commuters would reduce the number of stops and decrease journey times between key origins and the city

Bus priority
Investigate measures to improve travel time reliability for public transport such as clearways, traffic light signal pre-emption, bus gates, hard shoulder bus lanes

Mobility as a Service
This considers first and last mile connections and includes the launch/development of an app based tool that combines public transport, carpooling/rideshare and micro mobility travel options.

Bus lanes
Additional direct express bus services targeting peak hour commuters would reduce the number of stops and decrease journey times between key origins and the city

Mass rapid transit
Dedicated public transport corridors such as clearways, busways, rail corridors, segregated from general traffic require high density catchments, but would decrease travel times for public transport

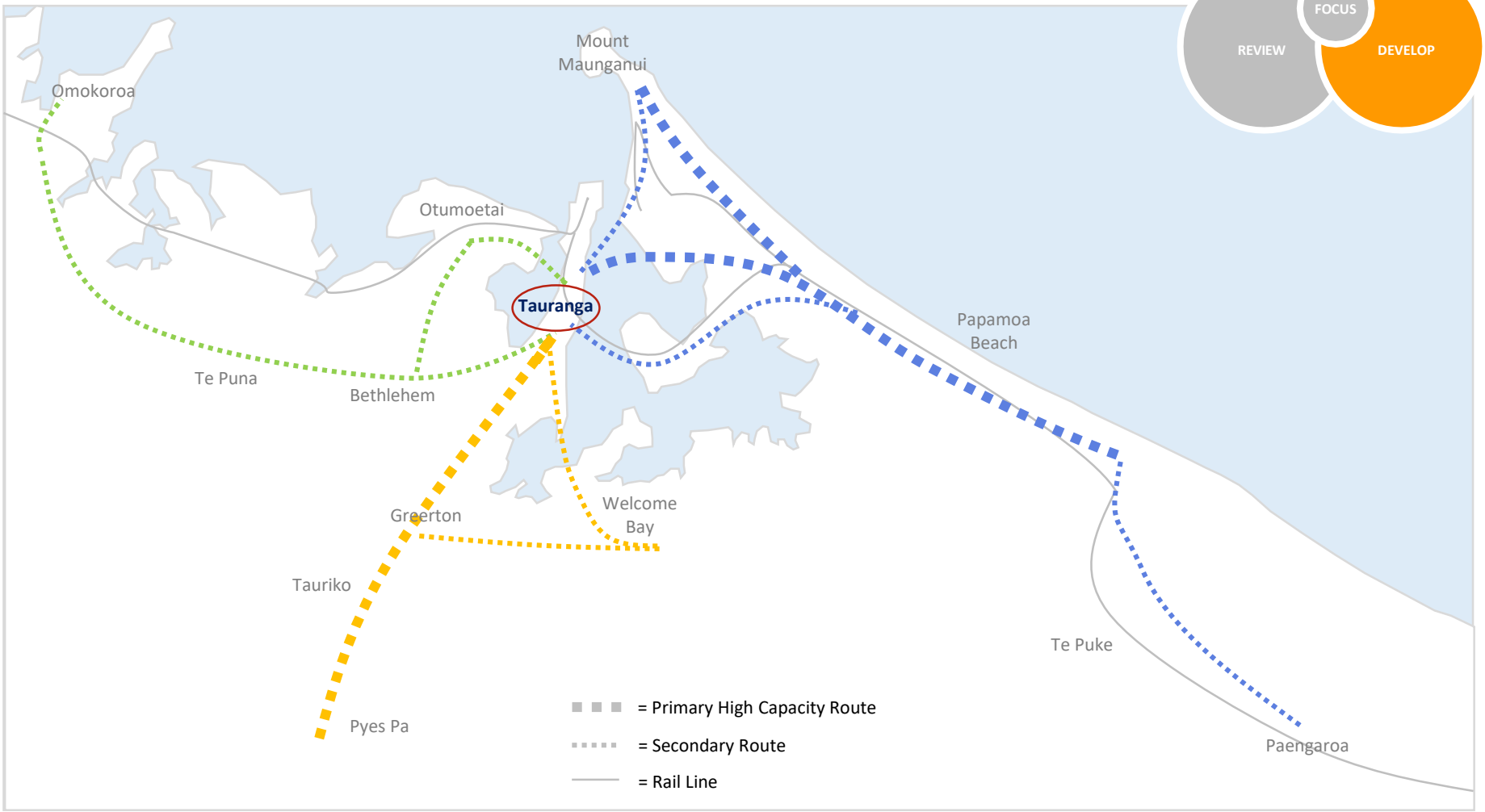
Marketing and promotion campaign
This will aim to raise awareness and understanding in the community regarding modal choice as well as promoting the improved public transport service offering.

Rideshare and Carpooling
Investigate measures to increase vehicle occupancy to help achieve emission reduction targets, e.g. rideshare apps, high occupancy vehicle lanes, parking

Land use and intensification
To enable mass transit and greater uptake of public transport there is a need to intensify land use around public transport hubs (TOD's). Also reduce the need to travel through local services

Walkability
Improve accessibility and safety for active mode users, including to public transport stops.

High Capacity Corridors (Schematic)




TAURANGA CITY
priority cycle routes
Legend
Priority Cycle Routes
To be investigated by NZTA
Proposed Bike Friendly Zone
Matua
Otumoetai
Bellevue
Brookfield
Wairoa Pa
Bethlehem
Judea
Wairoa
Gate Pa
Greerton
Barkes Corner
Tauriko
Wairmapu
Te Ranga
TAURANGA
Matapihi
Maungatapu
Hairini
Welcome Bay
Kaitemako
Ngapeke
Waitao
Te Maunga
Omanu
Omanu Beach
Kairua
Papamoa
Papamoa Beach